

Chemical Week

February 6, 1954

Price 35 cents



Here's how U. S. policy stacks up against others' on chemical sales to the Soviet bloc . . . p. 16

▶ **Pfizer's Guess and Bradley: There's method in their "mad" selling policies p. 36**

▶ **What are the tastes that rate with the tots? Drug firms probe the answer p. 52**

The door's open for new types of polyethylene. Short-chain branching is the key p. 44

▶ **Making water potable is an \$800-million business that gobbles up chemicals p. 77**

New Process... New Plant

NEW SOURCE OF SODA ASH

Westvaco, Wyoming



Refined by an exclusive process from the greatest deposit of pure trona yet to be developed, WESTVACO Soda Ash equals or exceeds every accepted standard of soda ash quality. Chemically, it is low in iron, chlorides and sulfates. Physically, Westvaco Light Ash has a crystalline structure which imparts excellent dispersal properties and a rapid rate of solution. Its free-flowing crystals handle easily in processing operations.

Three grades are available: *Regular Dense Ash* with a bulk density of approximately 63 lb./cu. ft. and a screen analysis which

has proven to be very acceptable throughout the glass industry. *Granular Dense Ash*—a singularly dust-free product with granular characteristics which improve the handling qualities. *Light Ash*—a bulk density of approximately 48 lb./cu. ft. which increases storage capacity.

Soda ash users from the Mississippi Valley to the Pacific can benefit *right now* by this economic new source of high quality ash. We will be pleased to furnish specifications, samples and prices to prospective users within or nearby our current shipping area.



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WESTVACO CHLOR-ALKALI DIVISION
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The Paint

that put the "block" in Concrete Block

WHAT BETTER APPROVAL of masonry finishes based on PLIOLITE S-5 than this plant of Texas Industries, Inc., a leading concrete block producer, colorfully protected by Ideal Chemical Products Inc., masonry paint. Photo courtesy Texas Coatings Co., Inc.



WATER-REPELLENT ACTION of durable paints made with PLIOLITE S-5 is graphically shown in this simple test.

How to make porous, lightweight concrete blocks repel water, yet retain their pleasing texture, was long a problem to manufacturers.

Sand and cement water paints stopped the water but were limited in color, destroyed the texture of the block, faded in sunlight and were difficult to recoat. Top coats of conventional oil paints failed prematurely from alkali attack.

Ideal solution was a paint based on PLIOLITE S-5—a styrene-butadiene

copolymer. This paint applied quickly—dried faster—fully resisted the water, alkalies and weather—and retained the texture.

Putting the "block" in concrete blocks is just one of many uses for versatile PLIOLITE S-5. What can you do with its solubility, clarity, adhesion, rapid dry and resistance to oxidation, water, oils, greases and chemicals? For full details write:

Goodyear, Chemical Division, Dept. N-9417, Akron 16, Ohio

CHEMICAL
GOOD YEAR
DIVISION

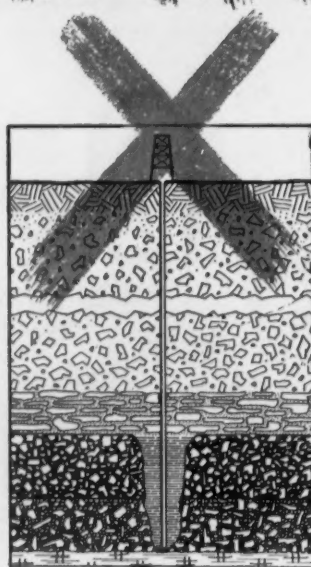
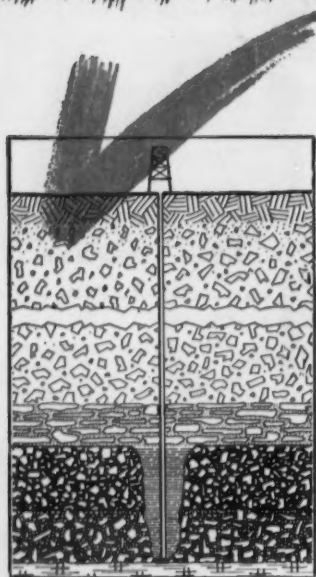
Chemigum, Pliobond, Pliolite, Plio-Tuf, Pliovic
—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Use-Proved Products—CHEMIGUM • PLIOBOND • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS—The Finest Chemicals for Industry

February 6, 1954 • Chemical Week

SULPHUR

...why can't *Every* dome produce sulphur?

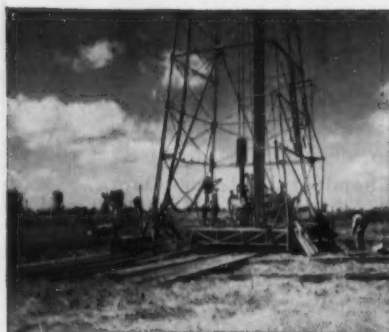


The production of sulphur in the Gulf Coastal Region of Louisiana and Texas by the Frasch Process, is from underground natural beds found in "domes." However, very few domes have been found to contain sufficient sulphur, if any, to be brought into production.

It is estimated that nearly 200 dome structures along the Coast of the Gulf of Mexico have been investigated over the last half-century but only fourteen have produced sulphur in quantity.

And the presence of sulphur, even in quantity, doesn't always mean a successful producer. Some years ago a dome was found, explored, and proved with the result that a plant for the production of sulphur was erected at a cost of several million dollars. Later it had to be abandoned because the underground conditions did not lend themselves to the use of the Frasch Process.

A dome is a sulphur mine only when it can be worked economically and produce sulphur in commercial quantities.



Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N. Y.



Sulphur Producing Units

- NEWGULF, TEXAS
- MOSS BLUFF, TEXAS
- SPINDLETOP, TEXAS
- WORLAND, WYOMING

Chemical Week

Volume 74

February 6, 1954

Number 6

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February 6, 1954 • Chemical Week

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YOUR
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TELL YOU

ALCOA

belongs

ALUMINUM HEAT EXCHANGER TUBES SAVE UP TO 80%

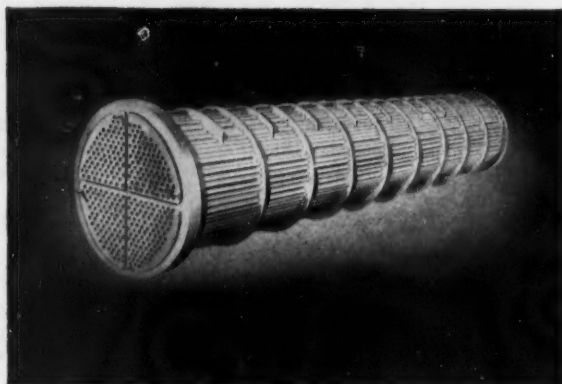
Alcoa Aluminum Tubes cost far less than other metal tubes . . . 1/2 the price of Admiralty, 2/3 the price of Mild Steel, 1/5 the cost of Stainless!

An average-sized refinery can save \$50,000 in first cost by using Alcoa Aluminum Tubes (figured on 20,000 tubes) as this chart shows:

PRICE PER 16 FOOT LONG TUBE

	3/4" O.D. x .049" wall	3/4" O.D. x .049" wall	3/4" O.D. x .065" wall	1" O.D. x .065" wall
3S-H14	\$1.31	\$1.50	\$1.82	\$2.37
Alclad (inside) 3S-H14	1.66	1.92	2.28	3.02
Seamless Mild Steel	2.68	2.82	3.18	3.49
Admiralty Brass	3.31	3.94	5.00	6.68
Cupro Nickel (30%)	4.87	5.71	7.46	10.03
Stainless Steel (304)	8.61	9.67	11.38	13.73

NOTE: All prices are approximate. Prices for 3S-H14 and Alclad 3S-H14 based on lots of 2000-4999 lbs., for Admiralty and Cupro Nickel 5000 to 9999 lbs. Prices for Mild Steel and Stainless based on lots of 10,000 ft. with exception of size 1" O.D. x .065" wall which is based on 5000 ft.



Further savings in handling and shipping, as well as excellent low temperature properties and resistance to corrosion—make Alcoa tubes the best buy, by far, for many heat exchanger applications.

Let us tell you more about the unusual savings you can make with Alcoa tubes. Write for the free booklet, *Alcoa Aluminum Heat Exchanger Tubes*.

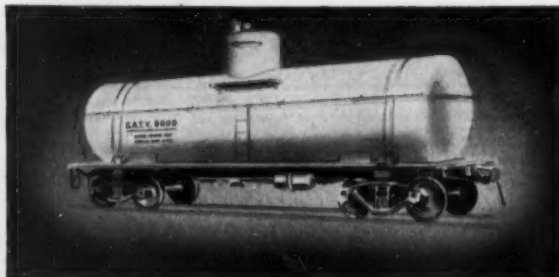
ALUMINUM TANK CARS SAVE UP TO 33 1/3%

Tank cars made of Alcoa Aluminum cost one-third less than stainless steel tank cars—savings well worth your investigation!

Aluminum does not contaminate or discolor sensitive liquids—does not promote decomposition. Result: *no damage to loadings, better end products*. Aluminum is highly resistant to most corrosive loadings—requires far less maintenance than other metals.

Alcoa pioneered the aluminum tank car more than 25 years ago . . . and that original car is still hauling fatty acids. There's proof that aluminum resists corrosion, gives lasting service, doesn't contaminate its cargo. If you want further

proof, ask your car builder about the advantages of light-weight aluminum rolling stock. Or better still, write Alcoa. We have gathered facts and figures on literally hundreds of liquid loadings that can be safely, economically shipped in aluminum. Ask us about *your* commodity today.



ALUMINUM in processing

ALUMINUM COILED TUBE SAVES UP TO 40%

ALCOA UTILITUBE® is aluminum coiled tube made of a specially selected alloy to provide low cost, easy workability and high fatigue strength.

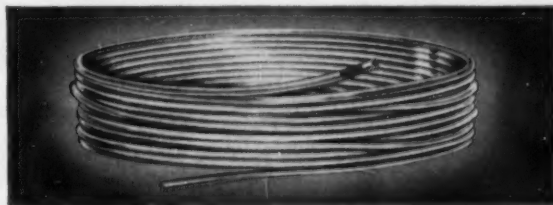
Alcoa Utilitube offers savings up to 40 per cent over copper . . . has excellent on-the-job forming and flaring properties. It is available in economical, long lengths up to 1,000 feet or more, depending on size. It stands up well under vibration . . . has high resistance to most industrial atmospheres and to many liquids and gases.

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Use Alcoa Utilitube for:

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- GASOLINE AND FUEL OIL FOR INTERNAL COMBUSTION ENGINES.
- LUBRICATING OILS FOR ENGINES AND MACHINES.
- FLUIDS FOR HYDRAULIC SYSTEMS.

For complete details, write for the booklet, *Alcoa Utilitube*.

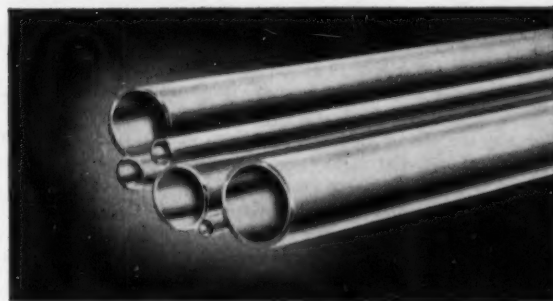


ALUMINUM PIPE IS THE LOWEST COST CORROSION-RESISTANT METAL PIPE.

Alcoa Aluminum Pipe and Fittings offer tremendous advantages to the chemical, petroleum and food processing fields. It is equally applicable for oil, gas, water, compressed air and mine drainage pipe lines. Structural uses, too, have become increasingly popular, especially in outdoor areas subject to corrosive fumes or salt spray.

Aluminum pipe, of course, is highly resistant to attack by hydrogen sulfide in sour crude and most other sulphur compounds . . . protects the quality of high-grade resins and other naval stores. It can be joined by every fusion process . . . is easier to handle and install because it only weighs 1/3 as much as other metal pipe. Its chemical inertness and corrosion resistance avoid batch and process contamination. High thermal conductivity and ductility speed filling of vessels with cold liquids.

You get all these cost-cutting qualities when you use Alcoa Pipe in the processing field. Write for the booklet, *Alcoa Aluminum Pipe and Fittings*.



For process chemicals, catalysts, catalyst carriers and desiccants, investigate Alcoa Chemicals.

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ALUMINUM COMPANY OF AMERICA
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I would like more information on:

- ☐ Alcoa Heat Exchanger Tubes ☐ Alcoa Utilitube
☐ Alcoa Aluminum for Tank Cars ☐ Alcoa Aluminum Pipe
☐ Alcoa Chemicals

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

OPINION

Dome vs Deposit

TO THE EDITOR: In your news article "Network Under Niagara" (Jan. 23) you mention a salt dome south of Batavia, N. Y., in connection with a proposed brine line to Niagara Falls . . .

There are, of course, no salt domes in this area. This is a bedded salt deposit of the Silurian . . .

JOHN L. RYON, JR.
International Salt Co.
Scranton, Pa.

One high-domed CW editor—after brushing up on geology and nomenclature—now allows that he brought salt "domes" a little too far north. "Silurian deposit" would have been more precise than "dome".—Ed.

Pollution Problems

TO THE EDITOR: Your news feature "Push Against Pollution" (Jan. 23) is applauded . . . It reminds us of the succinctly accurate job you did on the Raritan Valley pollution abatement story last August . . .

Chairman Chester Lydecker of the Middlesex Authority joins me in complimenting CW . . .

H. M. ADAMS
Johnson & Johnson
New Brunswick, N. J.

Roseate Future

TO THE EDITOR: Congratulations on your analysis of the chemical industry in the Pacific Northwest (Jan. 16). It was very well done—for Easterners!

Actually our liking for bright colors, which you mentioned [affecting paint markets], is probably more closely associated with our state of mind than with the weather. It is very difficult to be gloomy in an area such as ours . . .

Also, it is not quite fair to base the potential of wood residues as a source of chemicals on the effort of the government to make alcohol from wood in Springfield, Ore. With tree farming for the production of lumber a reality, the volume of nonlumber-grade wood residues that will be available each year in perpetuity presents a real challenge to the chemist.

At present, most of the use made of these residues is for pulp, fiber and particle boards, but ultimately they represent an inexhaustible, stable supply of oxygenated hydrocarbons. The explorations of Kellogg into the production of wax and dihydroquercitin

from bark, and of Weyerhaeuser into the production of tannins are examples of the beginning of the exploitation of a real potential source of chemicals . . .

Coal, too, is one of undeveloped assets. The Northwest has large lignite reserves for both power and chemical production. Our lack of native gas is only a temporary handicap.

Our dependence on other areas of the West for salt is a real handicap to our rapidly growing caustic-chlorine business.

Your report, on the whole, was excellent and very timely . . .

ARTHUR J. NORTON
Consulting Chemist
Seattle, Wash.

Chemistry in Aviation

TO THE EDITOR: Somewhat belatedly, because of a month in the tropics, I read the Dec. 19 issue of CW today. Your statement [in the news article "Chemistry in Aviation"] "Admittedly chemistry didn't help much on those early flights where the Wright brothers had virtually nothing but the wires, wood and will" seems to be another instance where the chemist is too modest about the achievement of his own science.

The Wright brothers used an engine made from an aluminum block, which would have been impossible except for the fact that Charles M. Hall was educated in chemistry at Oberlin College.

Considering the fact that the first airplane barely flew, it is a fair assumption that it would not have flown at all if the motor block had been of the denser cast iron.

Chemistry enabled the Wright brothers to succeed.

H. B. HASS
President
Sugar Research Foundation, Inc.
New York

Good point. We may have, in that particular—and general—statement, underplayed chemistry's role. But this we said, too: "In the 50 years since that flight, aviation has made fabulous progress. And a partner in every step has been the chemical industry."—Ed.

Bustling Valley

TO THE EDITOR: George Veith (Jan. 9) is progressive and aggressive, and possibly the "biggest (independent) insecticide, herbicide and defoliant manufacturer, formulator and distributor in the (San Joaquin) Valley."

However, California Spray-Chemical Corp. has five branch offices and plants in the Valley, together grossing well over \$2 million . . .

Since a number of people have already mentioned this statement [about Veith Chemical] to me . . . my respect for your readership increases. I hope you can recast the "view of the valley." . . .

I. F. CZUFIN
California Spray-Chemical Corp.
Richmond, Calif.

Right. As we suggested, but did not actually say, Veith Chemical, with its million-dollar sales volume, is the largest "independent" company of its type in the Valley. "Independent" is, of course, the key word.—Ed.

Xmas Trees

TO THE EDITOR: . . . Mr. Horner (Jan. 16) asked a good question . . . and one often asked by those interested in our large volume output of Xmas trees . . .

Minnesota black spruce (*Picea mariana*) do not grow to a neat three feet . . . nor should they be described as scrubby . . . We never use a three-foot tree . . . and we employ some interesting special methods of harvesting and handling. . . .

R. E. HALVORSON
President
Halvorson Trees, Inc.
Duluth, Minn.

Supporting Voice

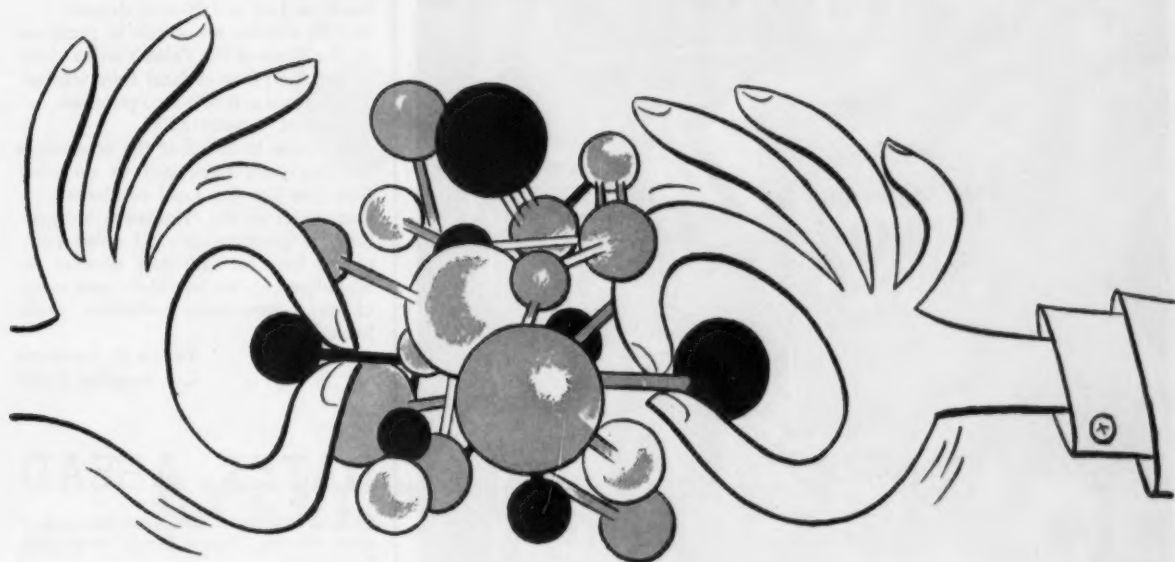
TO THE EDITOR: In your Jan. 30 issue I see the Palos Verdes residents 'outrage' finally found print. . . . Let me, as one of the minority, give some credit to the attempts of the Great Lakes Carbon Corp. to handle the situation gracefully. They've offered (through the Rancho Palos Verdes Corp.) to put in utilities and roads, do the basic landscaping, allocate . . . portions of the land for schools and recreation areas. The full development's supposed to cost over \$200 million, and will house a community of some 40,000 persons. . . .

That seems a pretty fair deal to me when you stop to think that the Great

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

STICKY CHEMICALS?



keep them free flowing with . . .

ATTASORB.

Hygroscopic, sticky, or waxy chemicals can cause a processing headache that is more than just a nuisance. Processing costs sky-rocket when grinding mills clog up, or hard masses form in storage bins, or bagging machinery has to stop because of caked-up material. Customer satisfaction drops rapidly, too, when shipments to them are caked solid or full of lumps.

Positive protection against caking and agglomeration can be gained by using just a small percentage of ATTASORB to condition the chemical giving trouble. This highly efficient product coats hygroscopic materials with a moisture-sorptive barrier that will not shake off—even with rough handling.

In addition to its remarkable sorptive capacity (active surface area, 13 acres per pound), ATTASORB is chemically inert and grit free . . . it will not harm processing machinery. Because of its light weight, a little bit goes a long way. Its neutral color blends well with many materials.

In addition to all these advantages, ATTASORB's price is very low—only 3 to 3½ cents per pound in carload lots, depending upon freight charges.

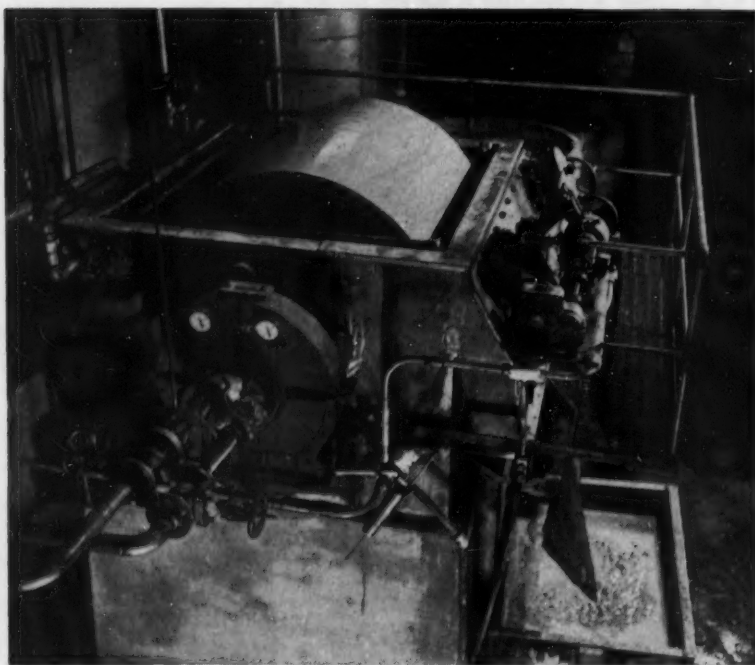
A special bulletin describing ATTASORB's use as an anti-caking agent and chemical conditioner is yours for the asking. Generous free samples and technical assistance are also available. There's no obligation, of course.

ATTAPULGUS Minerals & Chemicals Corporation



DEPARTMENT A

210 WEST WASHINGTON SQUARE, PHILADELPHIA 5, PA.



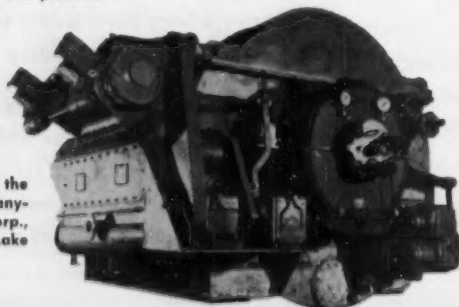
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Your Eimco filter is a product of skill and ingenuity wrought from more than half a century of service to the process industries.

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You Can't Beat An Eimco

OPINION.

Lakes Carbon Corp. backed into the whole project in the first place. For more than two years they tried to lease or buy a 165-acre deposit . . . had to acquire an option to purchase all the stock of the Palos Verdes Corp. to get the piece of land they wanted. That meant a 6,800-acre purchase . . . instead of a mere 165.

It seems to me that the company's bending over backward to do what they can for the local residents . . . that much of the "righteous indignation" is pretty unfair. If other companies here in California were as co-operative . . . we wouldn't have many of our community relations problems. . . .

PETER R. LUMMUS
Los Angeles, Calif.

DATES AHEAD

Federal Wholesale Druggists' Assn., mid-year meeting, Statler hotel, New York, Feb. 25-27.

Drug, Chemical and Allied Trade Section, New York Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 4.

Chemical Institute of Canada, division of organic chemistry's third symposium, McGill Univ., Montreal, March 8-9.

American Pharmaceutical Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., March 29-31.

National Farm Chemurgic Council, Inc., annual conference, Peabody hotel, Memphis, Tenn., April 5-7.

American Chemical Society, division of rubber chemistry, 65th meeting, Brown hotel, Louisville, Ky., April 14-16.

Assn. of Consulting Chemists and Chemical Engineers, symposium and banquet, Belmont Plaza hotel, New York, April 27.

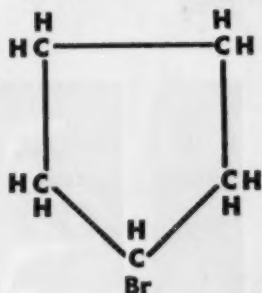
Air-Pollution Control Assn., annual meeting, Patten hotel, Chattanooga, Tenn., May 3-5.

Forest Products Research Society, national meeting, Grand Rapids, Mich., May 5-7.

Chemical Specialties Manufacturers Assn., midyear meeting, Netherlands Plaza hotel, Cincinnati, May 23-25.

Manufacturing Chemists Assn., annual meeting and joint outing with SOCMA, Greenbrier hotel, White Sulphur Springs, W.Va., June 3-5.

American Plant Food Council, annual meeting, Homestead, Hot Springs, Va., June 10-13.



CYCLOPENTYL BROMIDE

can this intermediate improve your product?

If your product development program calls for testing of new intermediates, we suggest you consider Cyclopentyl Bromide.

This new organic intermediate for introduction of the cyclopentyl radical is a clear, colorless liquid with a sweet, aromatic odor. Properties and specifications are as follows:

PROPERTIES:	Molecular weight	149.0
	Specific gravity, 20°/4°C.	1.390
	Pounds a gallon at 20°C.	11.6
	Boiling point, 760 mm.	136.7° to 137.7°C.
	Refractive index, n _D ²⁰	1.4885
	Bromine content	53.62%
SPECIFICATIONS:	Colorless to slightly yellowish clear liquid	
	Specific gravity 20°/4°C.	1.385 to 1.395
	Boiling range, 5-95%, not over	2°C
	Acidity	Passes test

Cyclopentyl Bromide, also known as Bromocyclopentane, is now available in commercial quantities. Samples on request to Michigan Chemical Corporation.



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listing properties and characteristics of
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to help you produce better
lacquers at lower cost ...

Methyl isobutyl carbinol—companion *latent* solvent to the powerful Shell ketone *active* solvents—makes it possible for you to use greater quantities of low-boiling alcohols while maintaining good blush resistance, gloss and flow.

Blended with IPA to offset its slower evaporation rate, MIBC allows greater flexibility in formulation to meet the lacquer specifications of individual customers.

You can order MIBC with other solvents in compartment trucks or tank cars for short notice delivery at bulk prices.

The famous Shell "Quality Group" of solvents includes, among others, MEK, MIBK and IPA . . . preferred by the nation's leading formulators.



For the complete story on MIBC in lacquer formulation, write for SC:52-21. Also ask for Technical Bulletin SC:52-51, *MIBC As A Latent Solvent in Furniture-Type Nitrocellulose Lacquers*.

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NEWSLETTER

Bullish or bearish on business prospects? That's an industry-pervading question right now. And it is also pikestaff plain that a lot of political capital is being made of recession and depression talk in Washington—and of depression and recession remedies or “thwarting measures.” And not to be overlooked is one simple truth: there's often more oratory than fact or logic in pronouncements from the Capitol. This, plainly, is an election year.

But both facts and logic underpinned the views expressed by some hard-headed businessmen at the regional conference of the Society of Security Analysts last week. Consensus re the long-term outlook for the chemical industry: bullish.

Among the supporting factors cited:

- Population expansion (which many companies have not as yet taken fully into account in their estimating).
- New products—coupled with the uniquely American yen to “try anything once.”
- National policy to completely utilize indigenous material resources.

- Research—“the ascending spiral.”
- Still-continuing investment in new plants.
- Automation—the shortage of trained technicians will not act as a brake on expansion, will mitigate the impact of labor shortages.

Conclusion re industrial chemicals output: up by at least 35% by 1960—more probably, by closer to 90%.

That's a look at the future; here's how some just-released corporate reports mirror the immediate past:

Hercules (long one of the first chemical companies to get out an annual statement) reports 1953 net after taxes at \$11.68 million. (Taxes took 63% of profits.) Gain in net: 4.1% over 1952.

Monsanto's net: \$26.38 million vs \$23.18 in 1952. Sales: \$340.61 million vs \$266.7 million.

Allied Chemical's net rose from \$40.3 to \$45.17 million. Sales pushed up from \$490.18 million to \$545.56 million.

American Viscose, however, ran into heavy water: sales fell off by about 3% from 1952's \$235 million. Profits before taxes were down 30%. (Two reasons: a month-long strike at Nitro, W. Va., and substantially lower prices.)

Fertilizer makers who have felt that TVA manufacturer of fertilizer smacked of unfair competition have received new support—surprising not in source but in specificity of support.

The U. S. Chamber of Commerce recommends that Congress review TVA's chemical and fertilizer programs to see “what public interest, if any, is being served and whether these business ventures . . . cannot be handled as well by private industry in cooperation with the Dept. of Agriculture.”

Agricultural colleges and USDA, it feels, could better carry on TVA's fertilizer research. Moreover, it says, the manufacture and sale—through farm cooperatives—are unwarranted competition with private enterprise.

Other recommendations: that the Treasury charge TVA interest on money it holds; TVA's power system should pay taxes. (The first of these was echoed by the President in his budget message.)

How much fertilizer and insecticides do farm cooperatives sell? Just-completed computations by the USDA—for the year ended June 30, 1952, shape up like this:

- Fertilizer: \$183,615,000 by 3,373 associations.
- Insecticides: \$24,649,000 by 1,111 associations.

•
It works. That's the news this week about the vitamin B₁₂-from-sewage project under way since last summer (CW, June 27, '53) at Milwaukee. The pilot plant constructed by Vern E. Alden Co. (Chicago) for the Milwaukee Sewerage Commission has completed its shakedown tests, is now in continuous production of vitamin concentrate. The product, say Alden and Milwaukee spokesmen "has exceeded expectations."

What remains now is to determine the market in animal and poultry feeds. If it's big enough, the commission will go ahead with its plans for a \$1-million plant.

•
A new company in Cleveland is using a new process to produce zirconium oxide. Zirconium Corp. of America has a \$200,000 plant capable of making three tons a day of the oxide, but initial production will be confined to one ton a day. The new process involves the use of limestone to separate zirconium values from beach sand.

•
Leet and Bogey are two Monsanto additions to the gardener's vocabulary. The former is a selective herbicide based on 2-methyl-4-chlorophenoxyacetic acid; the latter is a formulation of contact and residual insecticides—DDT, rotenone, cube resins, sulfur and zinc ethylenedisithiocarbamate.

Like Krilium soil conditioner and Folium fertilizer, the two new products will be sold through national retail channels.

•
Trade with the Soviet bloc—whether it's desirable or not (see p. 16)—has now been made easier. The Dept. of Commerce has extended the list of products acceptable for export to Hong Kong, gateway to Communist China. Published last week in the Federal Register, the list includes such chemical products as certain coal-tar dyes, a large variety of chemical specialties, many pigments and paints, ethyl alcohol, cream of tartar, baking soda, soaps and detergents, and flavoring materials.

•
Sen. Herbert Lehman and Rep. Franklin D. Roosevelt, Jr., will introduce to Congress—probably this week—a bill calling for construction, ownership and operation by New York State of all future Niagara Falls power development (CW, Aug. 1, '53). It includes the controversial preference clause giving municipalities and rural co-ops first call together with lower rates on power distribution.

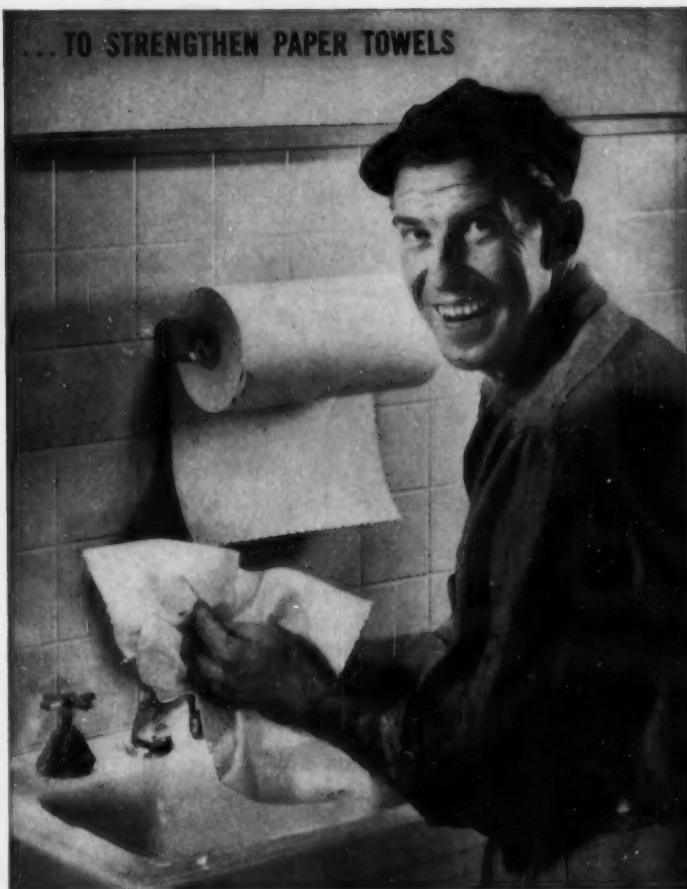
•
If you are intrigued by "carbonless carbon paper," which we predicted (Jan. 16) would soon be revealed and which hit the newspapers last week, watch for this development: multicopy chemical duplication method depending on direct diazotization, no light. Master sheet is treated with one chemical, copy with another; contact yields duplicates.

Good bet on unveiling date: three months hence.

... The Editors

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BUSINESS & INDUSTRY . . .

Up to the Makers

After long years of sitting idle and mute on the back benches while vital sales-affecting regulations are being drafted or pigeon-holed, chemical companies that make pesticides and food additives now can see prospects of getting into the thick of those proceedings.

Their new day may not dawn during the current session of Congress. The lawmakers are loaded with tons of high-priority legislation that must be attended to before this fall's campaigning. But two bills that would build up the chemical firm's status in Food, Drug & Cosmetic law administration appear to be on their way toward eventual enactment.

These are the new pesticide bill (HR 7125, a rewrite of HR 4277) sponsored by Rep. A. L. Miller (R., Neb.) and the new food standards amendment (HR 6434, a revision of HR 5055) introduced by Rep. Robert Hale (R., Maine). Both provide for the chemical manufacturer to take the initiative, propose what the tolerances and limits should be; and require the Dept. of Health, Education & Welfare to act on those proposals within three months.

Change in Courts: The Miller bill, reinforced with wording that has the blessing of the Food & Drug Administration and the National Agricultural Chemicals Assn., seems to have a clear field with no substantial opposition. Hale's bill last week won the endorsement of the New York State Bar Assn., which urged that it be passed without further hearings. The Empire State lawyers, after hearing FDA Commissioner Charles Crawford report that his manpower dropped from 862 to 797 in the latest economy move, also passed a resolution asking Congress to spare FDA in all future budget cuts.

Another change in the food and drug law climate is coming in the courts, according to Vincent Kleinfeld, former FDA counsel. He says recent Supreme Court decisions show a swing to the right, meaning that FDA will have to work harder to win its cases.

Further consumer protection, it seems, is up to Congress.



NEBRASKA'S MILLER: For insecticide makers, a chance to be heard.

Watch by the Sea

In the transoceanic triangle of chemicals, customers and Customs (CW, Nov. 28, '53), three court skirmishes—one involving phthalic anhydride, always a sore subject with organic chemical makers—have ended with two victories for domestic chemical producers, one for chemical importers.

In the Customs Court at New York, Judge Irwin Mollison wrote a decision that extends the coverage of tariff protection for phthalic anhydride producers, and other coal-tar chemical makers generally, under the "American selling price" clause of the tariff law. Siding with Chemo Puro Manufacturing Corp. and reversing the action of the Collector of New York, the court finds that phthalic anhydride should be appraised at its U.S. selling price even when there are no actual spot sales. In 1949, during a strike that curtailed the output of the largest of eight domestic producers, a group of importers sent out purchase orders for spot deliveries of the product; when the orders were turned down, on the basis that they could not be filled without hurting the companies' regular customers, the importers claimed the conditions of the statute were not being met and therefore the import should be assessed at its export

price. Judge Mollison's decision is that when a reasonable quantity of the product is available, the merchandise is being freely offered and the U.S. selling price must be used as the tariff basis. This decision is now being appealed by the importers.

A Precedent: The second favorable decision, from the Court of Customs and Patent Appeals at Washington, establishes that S-polymer, even though made synthetically, must be taxed at 45% and 7¢/lb. as a coal-tar product, on the ground that the product does occur naturally in coal tar. The Collector originally had assessed duty at that rate, but after Esso Standard Oil protested, the lower court held the product was subject to only 20% duty, as a manufactured article not specially provided for (para. 1558 of Tariff act). The Appellate Court's action restores the original higher duty. In rejecting testimony by a witness for the importer, the higher court held that the terminology commonly used in industry should be accepted in customs cases, in preference to opinions of academic specialists.

In the case of an import from Japan and Formosa labeled Fractionated White Camphor Oil SG 1070, Judge Mollison finds that the term "camphor oil" is broad enough to permit the import duty-free under para. 1731 (nonalcoholic oils, distilled or essential, not subject to tariff). The oil, which is a by-product in the process of freezing out gum camphor from the tree extract, was previously assessed by the Collector of New York at 7½% duty under para. 58 (nonalcoholic oils, distilled or essential, not specially provided for). The protest was brought before the court by Dodge & Olcott, Orbis Products Corp., Norda Essential Oil & Chemical Co., and other importers. The import is intended primarily for use in liniment and is not competitive with domestic synthetic camphor.

In general, these cases show, the courts are interpreting the law so as to protect the chemical industry as the lawmakers intended; but the log-jamming of chemical cases in the Customs docket highlights the need for rewriting the 24-year-old law to bring it more in line with the diversity of products and processes evolved in the industry since 1930.

Shooing the Blues

To businessmen who've been concerned about the 6.6% downturn in industrial production since last July—the dip for chemical and petroleum companies has been 2.7%—President Eisenhower's economic report to Congress late last week brought reassurance.

In the first place, the President says, soft spots in the U.S. economy are likely to end in 1954; and the drop in industrial output has been caused in great part by contraction of inventories. Consumer demand has held up remarkably well, and so has the purchase of production goods—machinery and new buildings—by industry. What's more, the outlook for consumer income looks bright, despite some increase in unemployment, and industrial investment continues at a high rate. This means inventories are being worked down smoothly, and without a severe jar to any part of the economy.

Secondly, Eisenhower let it be known that he and his Administration are accepting considerable responsibility for the nation's economic well-being. He ran down a list of what he calls "an arsenal of weapons" that could be used to check a recession; then, making it clear just where he stands, told Congress: "We shall not hesitate to use any or all of these weapons as the situation may require." Among those devices: public works, tax relief, and—if really necessary—an in-the-red budget.

Preventive Strategy: The economic report didn't carry any requests for particular legislation, but it did challenge Congress to adopt the tax revisions previously asked for (CW, Jan. 30). These were particularly designed to aid rapidly growing industries, such as chemicals. The President's point is simple: If the tax changes and his other recommendations are adopted, there's that much less chance that today's soft spots will snowball into a recession.

Wrapping up the Administration's concept of what should be the relation between government and business, the report proclaims that Eisenhower is solidly on the side of those who believe that government must be ready at all times to help maintain employment.

Government, the President stresses, has a long-range responsibility to keep the economy expanding. He says his Administration's job will be to help living standards rise—and he predicts that peace in Korea should make "sustained improvement" possible.



EISENHOWER AND RANDALL: They favor East-West trade in "peaceful goods."

Silent Spectator

Few chemical men will talk about it, but some concede that U.S. chemical companies do have a stake in stepped-up trade across "Iron Curtain" borders.

One thing's sure: any relief from foreign competition afforded by export of chemicals into Communist countries is bound to be temporary.

Supercharged with political dynamite is the question of increased trade between the non-Communist nations of the West and the Soviet-guided countries of the East.

American chemical companies are prudently keeping out of this controversy, although they might stand to gain some relief from overseas competition if rival concerns, particularly those in Europe, are given a green light to deal more freely with the Soviets. Their discreet silence is easy to understand: whatever slight easing of competitive pressure might result from such trading wouldn't be worth the risk of being tagged "leftish" for condoning that kind of commerce.

Even now, despite all the international tension and despite all the distrust between the capitalist and Communist blocs, important quantities of chemicals are going into the Soviet zone (see table). For example, the hammer-and-sickle nations have been taking 82% of the oxalic acid exported from France, 60% of the caustic soda exported from Italy, and 75% of the copper sulfate exported from West Germany.

More Trade Invited: The question of boosting trade with the Reds is coming to a head this month, following the recommendation by the Ran-

dall commission that the U.S. acquiesce to more trade between Western Europe and the Soviet bloc so long as it doesn't jeopardize military security.

The Communists themselves are eager to drum up more business on all sides. Only last week at the Berlin conference of the "Big Four" foreign ministers, Russian delegate V. M. Molotov painted a glittering picture of "the great markets" of the Communist countries, which he estimated contain about one-third of the world's population, and rapped the U.S. for its "discriminatory measures" tending to restrict "the countries of the American bloc from trading with the peoples' democracies."

And most countries—particularly those that exist on "trade," regardless of ideology—are willing to talk turkey with the Soviet Union, which now is enticingly opening its gold-stuffed coffers in a desperate effort to elevate living standards in the U.S.S.R. British, French and Canadian officials have publicly declared their willingness to accelerate East-West trade,* and a West German diplomatic mission is in Washington now negotiating

* British Foreign Minister Anthony Eden, for example, recently stated that the Churchill government and British industry "would be very ready to consider suggestions for facilitating contracts between United Kingdom traders and the Soviet trade organization."



REED AND SIMPSON: They're wary of dealing with Reds, want Congress to decide.

CHEMICAL EXPORTS TO THE SOVIET BLOC

(Thousands of Dollars)

First six months of each year

	1953	1952	1951
Britain	\$2,700	\$10,100	\$ 4,288
Germany	6,176	10,110	11,874
France	2,425	7,888	1,422
Italy	4,764	4,043	2,188

on this very topic. Japan insists that its economic life depends on trade with Communist China. Even in the U.S., which is considered by foreigners as ruggedly anti-Communist, a segment of the business community is not entirely averse to dealing with Russia. A recent survey made by The American Exporter Publications among 576 American export managers showed that 42% are in favor of fuller trade with the Soviet bloc right away, and 73% favor fuller trade with Hong Kong—a way station for Communist China—providing a Korean peace treaty is arranged.

Trade Called Treason: Against this background, the Randall commission called on the U.S. to encourage more trade between Western Europe and the Soviet bloc in "peaceful goods." This is expected to bring a scornful blast from Sen. Joseph McCarthy (R., Wis.), who leads a following that denounces as treasonous all trade with Communist China, and also frowns on commerce with the Soviet countries in Europe.

McCarthy, who thrives on controversy, cites three imposing reasons for boycotting the Peiping regime of Mao Tze-Tung. Why, asks McCarthy, should the U.S. send anything of value to a power that—

- Is obstructing settlement of Korean peace?
- Is refusing to account for some 3,400 U.N. servicemen previously listed by the Communists as having been taken as prisoners-of-war?
- Is believed to be supporting the Viet Minh forces in the war against the French in Indo-China?

In point of fact, the political principles involved loom much larger than the real economic significance of East-

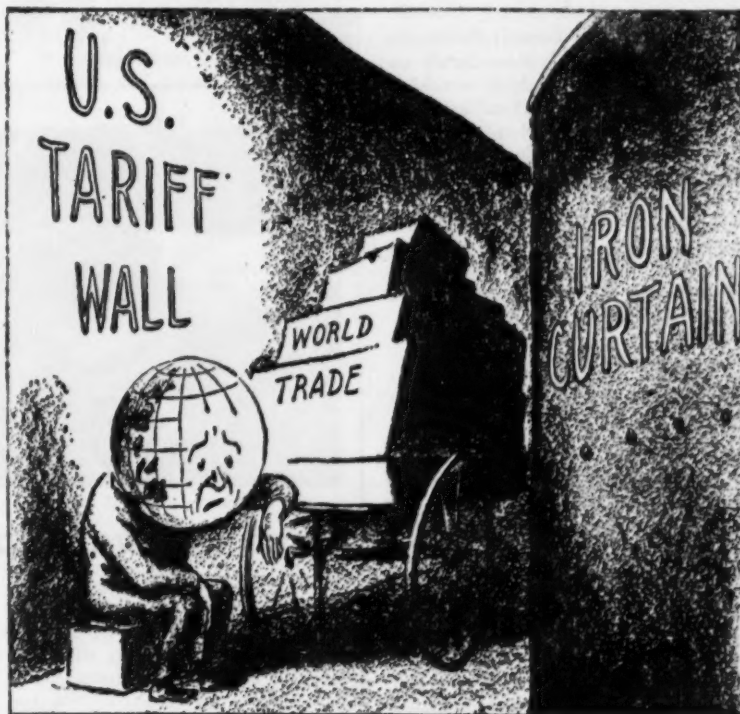
West trade, according to officials in the U.S. Office of International Trade. Basic facts are these:

- Free-world trade with the Soviet bloc, though rising slightly, is relatively small, and the potential for increased trade is slight.
- Cumbersome Communist state trading practices plus the Communist drive for self-sufficiency will tend to hold East-West trade down.
- Even though hungry for more peaceful trade, U.S. allies can be ex-

pected to continue to retain controls on strategic items.

• Free-world trade with China, depressed during the Korean war, seems certain to recover, barring some new Communist aggression; but traffic with China won't regain its pre-World War II importance.

And what strikes home to U.S. chemical companies is this: European chemical companies are already exporting an estimated 40% of their output and their production capacity



FITZPATRICK IN THE ST. LOUIS POST-DISPATCH

ONE VIEWPOINT: "Where do we go from here?"

is increasing. The Soviet nations may be able to absorb some of that production for a few years, but if that limited market suddenly should be closed—because of attainment of self-sufficiency or because of some inexecutable dictatorial decree—much of those European chemical exports would be veering toward the U.S.

EXPANSION

Hydrides: Metal Hydrides, Inc., will build a plant in Devers, Mass., on a 75-acre tract of land as an extension of its operations at Beverly, Mass., to manufacture hydrides, metal powders, alloy powders.

Asphalt: Esso Standard Oil Co. will build an asphalt manufacturing and distribution plant at Fayetteville, N.C., at a cost of \$600,000. Raw materials will be barged up the Cape Fear River from Charleston and Wilmington, S.C.; construction of storage facilities is expected to start next week.

Tall Oil: The Arizona Chemical Co. will expand its separating and refinery facilities at Panama City, Fla., by two and half times present capacity. Completion date: mid-1955. No immediate production figures or cost estimates are available.

Aromatics: Crown Central Petroleum Corp. will start work immediately on a Houdriformer catalytic cracking unit at a cost of over \$1 million. The unit will be an addition to Crown Central's present refinery on the Houston Ship Channel at Pasadena, will have a daily capacity of 5,000 bbls. Blaw-Knox has the contract for erection of the unit, has promised completion by Oct. '54. Present capacity of the Crown Central refinery: 30,000 bbls./day.

Argon: Burdett Oxygen Co., Cleveland, plans construction of a \$500,000 argon producing unit in 1955 adjacent to its plant in Cleveland. Capacity: 100,000 cu. ft./day of argon.

Waxes: The J. I. Holcomb Co., Inc., Los Angeles, will begin work soon on a \$300,000 plant in Oakland, Calif., to produce cleaning chemicals, waxes and industrial brushes.

Naval Stores: Installation of additional chemical production equipment at the Glidden Co.'s Naval Stores Div. plants at Jacksonville, Fla., and Valdosta, Ga. at a cost of over \$500,000 is being

considered by company management. Major addition: facilities for the production of a new series of terpene chemicals.

Fertilizer: Mathieson Chemical Corp. has completed its expansion program (at a cost of \$1.5 million) at its Pasadena, Tex., plants, company representatives say. Operation of the fertilizer unit alone should raise Mathieson's production at Pasadena by some 25%.

Nitroparaffins: Commercial Solvents Corp. plans to build large-scale nitroparaffin facilities at Sterlington, La., and will increase its existing nitroparaffin units at Peoria, Ill. Total cost of the expansion: \$5 million. Full-scale production is slated for the last quarter of 1955; Commercial Solvents will initially manufacture 11 or 12 compounds in the nitroparaffin group.

COMPANIES

The Mid-South Dye & Chemical Co., Inc., Wadesboro, N.C., has been incorporated, with authorized capital stock of \$50,000 preferred and 500 shares, no par, to act as distributor of dyes and chemicals.

Sales and purchases:

• **Graco Fertilizer Co. (Cairo, Ga.)** has purchased the business and plant facilities of the former Cairo Fertilizer Co.

• **The Carborundum Co.** is buying the American Tripoli Corp., Seneca, Mo. This latest purchase marks Carborundum's second major acquisition in three weeks—following purchase of the Stupakoff Ceramic & Manufacturing Co., Latrobe, Pa.

• **The Alox Corp. (Niagara Falls, N. Y.)** has been purchased by Surpass Petrochemical Ltd., Scarborough, Ont., for \$500,000. The transaction was effected by purchase of nearly all outstanding capital stock, which had been held principally by New York interests.

• **Crown Zellerbach Corp.** has bought 42 acres of industrial property in East Antioch, Calif., as a site for a proposed new paper mill. No purchase price has been revealed.

• **Pope & Talbot, Inc.** has purchased retorts and other facilities for treating wood from West Oregon Lumber Co., Linnton, Ore., will transfer its newly acquired property to St. Helens, Ore., to increase capacity at St. Helens by 50%, and to diversify P&T's products.

• **Monolith Cement Co.** is considering the purchase of the government's \$7.5-million alumina plant at Laramie, Wyo. After March 1, the government (now conducting experimental work on the problem of obtaining alumina from clay at the Bureau of Mines' station at Laramie) will have no funds with which to operate the plant, plans to dispose of both the building and machinery.



Up to Prewar Standards

RECOVERING FROM an almost complete cessation of production at the end of World War II, the Japanese sulfur industry this year should be back in international competition again. Production capacity in 1953 was 217,000 tons

(an increase of 20% over 1952 output); stocks estimated at 20-30,000 tons have accumulated for export. Main difficulties now: high production costs, lack of shipping facilities, re-establishment of trade channels.

Liberal Line on Pensions

▲ "Our company . . . like most we hear about . . . has gradually slipped over into noncontributory pensions."

▲ "One way to satisfy management is to raise maximum limits on pensions."

"Easier eligibility is a trend to watch. It's no longer necessary to serve with a firm two years to share in pension plans."

▲ "Benefits that come up to 50% of the salary level are becoming more commonplace today."

▲ "Lump sum retirement settlements are one way to enable executives to take full advantage of their pension rights."

▲ "We're reviewing past service records in order to compensate top-level management whose pensions are tied to outmoded pay levels."

MANAGEMENT PENSIONS: The trend's toward relaxation right down the line, with emphasis on bringing management "up" to standard.

Righting Pension Wrongs

Pension plans for management in the chemical industry are taking on a new look. There's a strong movement toward adoption of the noncontributive plan for higher salaried employees, clarification of certain major areas where misunderstandings could crop up. And separate deals to clear up the possibility of discrimination against particular key employees are becoming commonplace, rather than the exception to the rule.

The movement has gathered momentum slowly, companies admit in answer to a recent CW survey. And virtually every company that's decided to change its pension setup "to fit the times" has done it in its own way. But one reason lies behind the switch: chemical companies are trying to help salaried personnel catch up to production line employees and restore balance to executive pensions. The problem's acute now in many cases because the recent social security increases have altered the ratio of retirement benefits to income so that employees making less than \$3,600/year are doing better—in some respects—than executives.

What They're Doing: In the general attempt to fatten up executives' retirement funds, many companies are adding supplements to existing pen-

sion plans. Minnesota Mining & Manufacturing Co., is typical, has added:

- No ceiling on the company's contribution to management pension funds.

- A general increase in pension rights for executives—to 2% of the average pay from 45-65 (or from 55-64, whichever is higher) multiplied by the years of service from age 45 to retirement.

- Relaxation in retirement age limits, with a special concession that "even if an employee decides to work beyond normal retirement age (65) he can choose to draw his pension from age 65 onward." (Or can choose to draw his benefits later, allowing premiums to mount up.)

Dow Chemical Co. now has in effect another special supplementary retirement plan for salaried personnel. Most radical change: Dow has lifted its old restriction that provided that all salary in excess of \$30,000 would be disregarded in adding up retirement benefits. Today, an executive's full salary is used as base for computing pension rights.

Main Problem: Most often mentioned by chemical companies as the problem they're trying to overcome in management pension equality is that of coping with "old-time employees."

In most cases, a 30-year man's pension rights are geared to preinflation pay.

Some companies admit "the only way out is to make a separate contract with each man, setting his pension arbitrarily as best we can." Others, such as American Cyanamid, have re-established past service credits on current standards.

Stauffer Chemical Co. has another twist. If an employee leaves the company after having been in the pension plan for at least 15 years (or having reached the age of 45) he receives an annuity based on all funds contributed—both by the company and by the employee himself.

One thing companies are obviously trying to get away from is any possible feeling in management circles (such as has been circulating in recent weeks) that key employees have been "wrongfully advised as to their pension rights." Certain companies have been known to point out that increases in pension rights "are an effective raise in salary," then refuse to compensate an employee who leaves their employ before the minimum retirement age has been reached.

That leads to bad public and employee relations; and chemical companies are agreed as to the multifold worth of a good pension plan.

Oldest, Newest, Most Ambitious*

Like the little boy whose mother forgot to tell him before the party that second helpings should be declined with thanks, the Oil Workers International Union (CIO)—which started out to represent only the men in oil fields and refineries—is thoroughly enjoying itself collecting new members as the oil companies move deeper and deeper into petrochemical and chemical operations.

Of all the trade unions now vying for the patronage of employees in chemical and petrochemical plants, OWIU is the oldest organization but the newest one to start organizing chemical workers.

OWIU also is the union with the biggest aspirations; without pausing in practical, day-to-day chores to hold onto and to augment its own mem-

bership, OWIU keeps working, planning, and plugging for national and worldwide alliances of all unions for oil and chemical workers.

Conclave in Philly: A step toward one of those goals is scheduled to be taken Feb. 15 in Philadelphia, where delegates from OWIU and other unions will gather to draw up a proposed constitution for an organization uniting employees in U.S. oil and chemical industries (*CW Newsletter*, Jan. 16). And while the call to this convention was signed by the president of an independent union, it appears that the move stemmed from the coalition of oil unions formed by OWIU President O. A. (Jack) Knight in 1951. Certainly OWIU is responding to the invitation with enthusiasm.

On an even broader scale, OWIU

is taking the lead in helping to set up the International Federation of Petroleum Workers, planned as the organization of all petroleum, petrochemical, natural gas and pipeline workers throughout the free world. Its opening meeting will be held in Paris starting April 5, and a prime aim will be unionization of "150,000 underpaid workers in the Middle East."

Mutual welfare is a cardinal principle in OWIU. A recent statement of the OWIU program declares that: "As long as there is one hungry child, the bread on our tables is not secure." A more pragmatic example of how OWIU feels about this point: when Stauffer Chemical last month suspended certain operations at Long Beach, Calif., members of Local 128 voluntarily went on a 32-hour week to avoid a 20% reduction in work force.

Mostest, Not Firstest: Ever since petrochemical plants began to spring up and OWIU moved in to organize the workers, there's been friction with another CIO union, the United Gas, Coke & Chemical Workers, which feels that it should have CIO recognition for all chemical operations. At present, CIO is straddling the issue; it says that whichever union is stronger in the area—not the one that gets there first—shall carry the CIO banner in any disputed chemical or petrochemical plant.

This most ambitious and battle-scarred union is headed by a mild-mannered, middle-aged man who's the very opposite of the gruff, blustery union leader typified by autocratic John L. Lewis. Knight, a stillman in Shell's East Chicago refinery from 1926 to 1937, has served as OWIU president since 1940 and in that time membership has risen from 20,000 to more than 100,000.

Oil worker organizing in the U.S. began nearly 50 years ago along the Gulf Coast, but the movement then went into a stall until 1918. In that World War I year (with high prices, a manpower shortage and a friendly administration in Washington), the AFL chartered the Oil Field, Gas Well & Refinery Workers Union with about 4,000 members. By 1920, this union was demanding the eight-hour day and a \$5 minimum daily wage. Completely ignoring the union, the companies granted those benefits, making the union seem unnecessary.

* Editor's note: This is the fourth and last in a series of articles about the labor unions most active in the chemical industry. Others: *CW*, Aug. 29, '53; *CW*, Sept. 26, '53; and *CW*, Dec. 5, '53.

**NO, MR. ADAM...WE CAN'T
GO BACK TO YOUR WAY OF
LIVING (WHO'D WANT TO?)...BUT WE
CAN HANDLE THIS ATOM
AGE ALL RIGHT BY STICKING
TOGETHER IN THE
UNION - BACKED UP BY
MILLIONS OF GUYS
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OTHER
UNIONS!**



MESSAGE TO MEMBERS: Its theme, a flaming faith that unity works wonders.



OIL WORKERS' KNIGHT: No shining armor, but indefatigable zeal.

Down to Skeleton: Partly as a result of that loss of prestige, partly because of an internal struggle between Gulf Coast and California factions, and partly because of the great depression, membership dropped from 20,000 in 1920 to only about 300 by 1933. The New Deal's National Recovery Administration gave it a new lease on life, and later the Wagner law spurred further growth.

Meanwhile, in 1936 the Oil Workers helped form the CIO, leading to the ouster of CIO unions from the AFL. At the 1937 convention, OWIU's present name was adopted, along with a proviso that Communists and Fascists would be barred from membership. It's to be noted that this came at a time when Soviet-firsters were riding high in many other unions.

Having led the CIO in winning new wage gains in 1945 and again—this time with the help of Knight's coalition—in 1951, OWIU now is a power in U.S. labor circles; there's been talk of merging Gas-Coke into OWIU if Gas-Coke doesn't keep pace with the larger union. Gas-Coke's new president himself admits that such a merger "would have certain very desirable advantages."

One significance of OWIU's position in the oil, gas and chemical industries is the effect on wages. Although it represents probably not more than about 15,000 chemical and petrochemical workers, OWIU exerts a strong upward force on chemical wages by tying the pay of chemical workers to wage rates in oil fields and refineries. Latest Dept. of Labor figures showed that refinery wages were nearly 28% above the hourly average in chemical and allied industries.

New North American Titleholder

High up in the Colorado Rockies, Climax Molybdenum Co. is setting new North American mining records this week. Production of molybdenum ore has soared to 27,000 tons/day; the company will provide almost two-thirds of the metal produced this side of the Iron Curtain in '54.

Climax's expansion program, requested by the government in 1950 to relieve a world shortage of the vital metal used to harden steel and cast iron, helps to assure an adequate supply to all free-world consumers. (Export licenses still must be obtained for each shipment outside the continental limits of the U.S., but with domestic allocations lifted, the procedure should be a mere formality.) Published sources estimate that Soviet production this year will at best amount to less than one-fortieth of the output of free-world industry.

Its new title—largest ore producer in North America—is a special sort of triumph for Climax management. U.S. Steel's Robena coal mine in Greene County, Pa. (with a daily coal output rate of 24,500 tons) had held the title proudly for more than six years; the coal mining industry in general has had a special claim on the tonnage honors for decades.

But holding various titles is nothing new for Climax. For many years its community—11,400 ft. up in the Colorado Rockies—has boasted the highest year-round post office in the U.S., and just last fall, television

antennas were installed 13,770 ft. up on McNamee Peak, overlooking Climax.

Over 8 million tons of molybdenum ore will be mined there this year; a hypothetical train required to haul the ore would stretch about 1,089 miles—or from New York City to Minneapolis.

Climax's molybdenum capacity has been increased 78% (or from 24 to 42.5 million lbs.) since 1952—"strictly by means of company financing"; and there's every possibility the output could be hiked further if new markets for the metal develop.

There's a good chance that that very thing may happen, too, company officials promise. Molybdenum has long been used to harden automotive and tool steels and cast iron, but some of its more interesting uses have been developed just since the end of World War II. Molybdenum sulfide possesses unique qualities as a lubricant; the metal itself is now known to be a vital trace element without which plants can't grow to maturity.

Development of the jet engine, and the almost coincident discovery by Climax of the arc casting method of producing molybdenum ingots, offers even wider fields for speculation. Molybdenum's high melting point (4750 F) and its relative abundance are two strong selling points to engineers thinking in terms of the high-pressure, high-temperature problems of the future.



COLORADO MOLYBDENUM: With output now 27,000 tons/day, Climax Molybdenum Co.'s mine at Climax, Colo., has become the largest shaft mine in North America.



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BUSINESS & INDUSTRY



CHEMISTRY'S ROLE IN FOOD: First in MCA's series on chemistry's contribution to raising living standards.

Low-Pressure Salesmanship

Conceived as a supplement to its Fact Book, published last spring (CW, May 30), the Manufacturing Chemists' Assn. is previewing a new series of publications this week. First out: a 14-page booklet, outlining the impact chemistry has had on food production throughout the world.

The idea for this first supplement was a direct result of the Delaney hearings in Washington in 1952, MCA officials say. The splash of sensationalized testimony that spewed out of the hearings appalled many MCA members; the deluge of "crackpot opinion" and unreliable articles that followed in the lay press convinced them that an authoritative, yet non-technical article must be put in the hands of the public, if general misunderstandings were to be dispelled.

Other trade associations in the field of food chemistry were approached; the decision was reached that this (and the series as a whole) would be strictly an MCA gesture, but that "help would be sought from other agencies concerned."

Distribution is being handled in a manner more than vaguely reminiscent of the Fact Book. Member com-

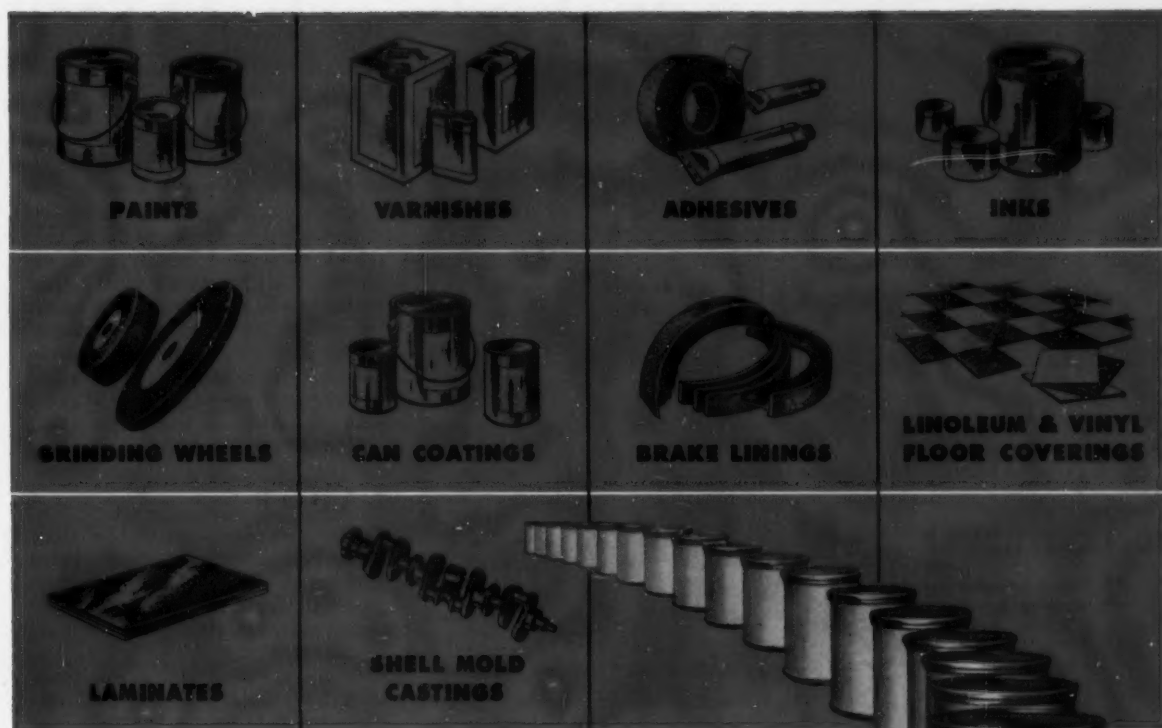
panies may buy quantities for local community distribution; special allocations are ticketed for high schools and clubs—at a teen-age level.

In choosing its facts, MCA is admittedly slow but sure. "Your Food and Chemical Research" took a year to formulate and compile and there's no set date of issuance of the next publication.

Besides covering research in fertilizers, pesticides and miticides, the booklet dips briefly into animal supplements, stresses the way food enrichment has raised the health level in the U.S. in recent years. Nutritional gains are discussed; the evolution of a new chemical additive is diagramed.

Institutes such as the American Institute of Baking, the American Meat Institute and the Grocery Manufacturers of America helped whip the finished product into shape—in an advisory capacity.

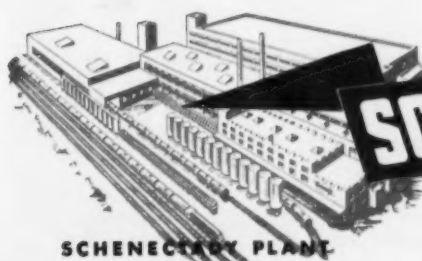
There's no telling just how much effect the project will have on righting public misconceptions immediately; but MCA will be satisfied if even a few of the first 200,000 recipients gain fresh insight into the role chemistry plays in food output.



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BUSINESS & INDUSTRY



FOOD MACHINERY'S BEESON; His appointment dangles before the Senate.

Welcome but Waiting

When President Eisenhower selected Albert Beeson of Food Machinery & Chemical Corp. to fill a vacancy on the five-man National Labor Relations Board (*CW Newsletter*, Jan. 16), chemical companies and unions alike were satisfied.

Even the hard-to-please United Gas, Coke & Chemical Workers (CIO) took a hopeful line, noting that Beeson "has been tagged as a 'non-lawyer' who has a better knowledge of labor unions and their problems than other Eisenhower appointees, and one who will 'call his shots as he sees them.'"

Chemical firms and the major unions in the chemical field hope that NLRB will now make a favorable ruling in the Trona dispute over whether craft unions should be allowed to break into plantwide bargaining units in this industry.

Beeson was ready to begin work on the board several weeks ago, but Senate confirmation was delayed by Democrats on the Senate Labor Committee. That committee finally cleared the appointment last week by a 7-to-6 party-line vote.

Newcomers Invited

Chemical and pharmaceutical companies interested in getting started in work with radioactive isotopes felt for a few days last week that they were being rebuffed in advance by the Atomic Energy Commission, which has the authority to issue or deny licenses for use of those materials.

In new AEC regulations appearing in the Federal Register, the agency

specified that applications for radioisotope procurement will not be approved "unless the applicant has received a reasonable number of authorizations for radioisotopes procurement." This made it seem that the door was closed for all companies not already engaged in this field.

But, questioned by CW, AEC explained that this wasn't what it had meant at all. A company that hasn't yet used radioisotopes can get authorization through employment of someone who has gained the required training and experience by working with the AEC or with some other authorized employer.

LABOR

Tricks with Statistics: While labor union leaders register rising concern about recent increases in U.S. unemployment totals, a closer look at the record shows that things aren't quite so bad, after all.

In the chemical and allied industries, for example, it's true that employment did slip by less than half of 1% from September to October, the latest month for which nationwide figures are available. But, to get a bit more perspective into the look-see, try a comparison of chemical employment figures for that latest month and for one year previously:

Oct. 1953	755,600
Oct. 1952	748,700

So, it appears to be fully as logical to talk about the *increase* in chemical employment as it is to emphasize the recent slippage.

H-Plant Boom: One place where employment continues high is at the Atomic Energy Commission's Savannah River Project near Aiken, S.C., where Du Pont is making H-bomb material for Uncle Sam. As of last week, working at this plant were 16,667 persons on construction (Du Pont and subcontractors); 6,193 in operations (Du Pont); and 260 in the AEC's project office. AEC says "substantial numbers" of construction workers will be needed for "some time to come." The operations force will keep on growing slowly to an expected 7,200 total.

CIO Wins Polls: Three recent representation elections at chemical and pharmaceutical plants have wound up in victory for CIO unions.

• At Shell Chemical's new plant in Ventura, Calif., hourly paid employees chose to be represented by the Oil Workers International Union (CIO). There were 46 ballots for

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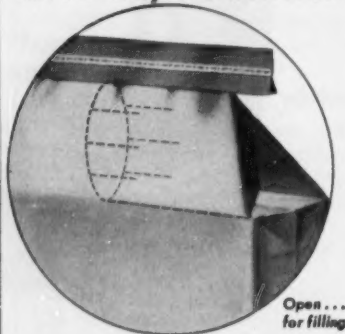
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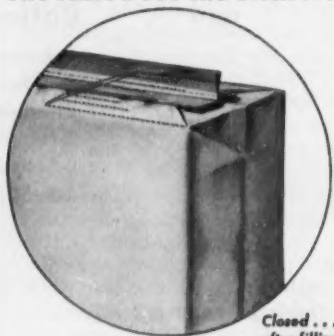
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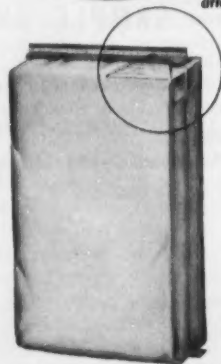


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B & I

OWIU, 14 for the AFL Operating Engineers, and 28 for "no union."

• Two polls were won by United Gas, Coke & Chemical Workers (CIO). In the International Minerals & Chemical Co. plant at Pulaski, Tenn., Gas-Coke held onto its collective bargaining position despite "raiding" efforts by the left-wing International Union of Mine, Mill & Smelter Workers and the right-wing International Chemical Workers Union (AFL). Voting went like this: Gas-Coke, 44; Mine-Mill, 11; ICWU, 5; no union, 1. Gas-Coke's other recent triumph was at the McKesson & Robbins plant in Memphis, Tenn., where 44 workers voted for Gas-Coke and 20 for no union.

Lawmaking Feuds: Unions and management are trading verbal blasts over current proposals for labor laws. While the CIO yelps that President Eisenhower's recommendations for amending the Taft-Hartley law are "to the right of the late Senator Taft," the Chamber of Commerce of the U.S. voices hope that the GOP leadership will come up with bills giving the individual states more freedom to deal with labor disputes, even if the T-H law is involved.

Recently advanced bills in the state legislatures:

• In South Carolina, a "right-to-work" bill has been introduced; it would outlaw all forms of compulsory unionism.

• In Kentucky, a bill has been introduced to cover the position of truck drivers during labor disputes. If passed, it would permit drivers of contract and common carrier trucks to refuse to cross picket lines in a bona fide strike.

• In six states—Massachusetts, Michigan, New Jersey, New York, Rhode Island and Virginia—containing numerous chemical processing plants, legislators are pondering moves to liberalize the benefits provided under workmen's compensation laws.

Red Infiltrators: Further evidence of efforts by Communists to infiltrate chemical plants during recent years came up last week in testimony before the Subversive Activities Control Board in Washington. Dewey C. Price, former undercover agent for the FBI, told of Communist activities in the Charleston area between 1935 and 1948 when he posed as a "full-fledged member" of the Communist Party.

A sample of what's in store for some left-wing union chiefs came in Cincinnati, where Melvin Hupman, Dayton union leader, drew a five-year sentence as a Communist perjurer.

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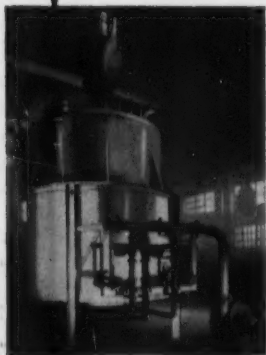
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B & I

LEGAL

Government Wins: Another lawsuit in which a chemical process company sought to recover damages from the U.S. government on account of a fire has been decided in favor of the government.

In U.S. District Court at Seattle, Judge George H. Boldt has turned down the bid by Rayonier, Inc., to collect \$1.5 million for damages sustained in a forest fire that destroyed hundreds of acres of company-owned timber near Port Angeles, Wash. Rayonier asserted that the government had been "negligent" in fighting the fire.

Phosphate Patent: Companies and municipalities that use small quantities of sodium metaphosphate to protect water mains, piping and equipment against corrosion must pay royalty to Hall Laboratories, Inc., Pittsburgh, whether they buy the metaphosphate from the Hall affiliate (Calgon, Inc.) or from any other supplier. This is the gist of the recent decision in the U. S. Court of Appeals at Richmond, Va., in which the judges upheld an earlier finding by a district court in South Carolina that the 1943 patent granted to Owen Rice and George Hatch is valid.

In writing the decision, Circuit Judge Morris A. Soper averred that Rice and Hatch, both employed by Calgon, derived their process from actual experiments, not from prior patents. The defendant, Springs Cotton Mills, Inc., has been using metaphosphate treatment at various plants for about 10 years, and at first bought the material from Calgon, paying royalty. Recently, the textile firm has been buying metaphosphate from Rumford Chemical Works, Rumford, R.I.; and had stopped paying royalty on the ground that the Rice-Hatch process was suggested by several earlier patents on water treatment methods.

Judge Soper recognizes the fact that two earlier patents called for use of sodium metaphosphate in the same proportion as that specified in the Rice-Hatch process, but declares that Rice and Hatch still made a patentable discovery because the earlier methods were aimed at prevention of excessive scale formation, while the Rice-Hatch process is intended as a means of keeping pipes from rusting.

Water-Based Fuel: People who invested more than \$30,000 in a scheme for production of fuel for internal-combustion engines by adding coal



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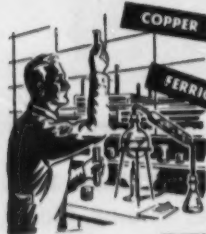


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B & I

dust and other ingredients to water have gone to court in an attempt to get their money back. After they filed a civil suit against Guido Franch, the 44-year-old "inventor," the state's attorney took their story to the Du Page County (Illinois) grand jury, seeking a criminal indictment. Investors told of watching Franch use his coal-water mixture in a gasoline engine, but other experiments, witnessed by experts, were reportedly failures.

Silent Settlement: Nine product liability suits whose original claims against two Buffalo (N.Y.) drug companies totaled \$790,000 have been settled for an aggregate of about \$35,000. Details of the settlements were not listed in court papers. The claimants charged that disabilities and in one case, death—were caused by a liquid salt drug product called "West-sal," which they said had been manufactured by Foster-Milburn Co. and distributed by Westwood Pharmacal Corp.

Another 20 civil suits, filed against the same two companies in U. S. District Court at Cleveland, also have been settled. Terms were not disclosed.

Sewage Suit: Reichhold Chemicals, Inc., has been charged by the Michigan Water Resources Commission with dumping 15 times more phenol in the local sewage than it is supposed to. In a bill of complaint filed in the Oakland County circuit court, the Commission asserts that Reichhold agreed in 1951 to limit phenol deposits to 25 lbs. per day. Tests conducted over an 8-day period showed the company dumped 3,275 lbs. Reichhold, which has been previously warned it was in violation of pollution standards, has until the end of the month to answer the charge.

FOREIGN

Potash/Israel: The Dead Sea potash works at Sodom has started production of 100-125 tons of potash daily and hopes to reach 400 tons by June, company representatives say. Exports reached 3,250 tons of potash to the U.K. during December—the first shipments since the plant was forced to close in 1948. Output should reach 100,000 tons (total) this year—over half of which is ticketed for export.

Pharmaceuticals/Brazil: Schenley Laboratories, Inc., has signed a long-term licensing agreement with Laboratorios Moura Brasil-Orlando Rangel, S.A., Rio de Janeiro, under which

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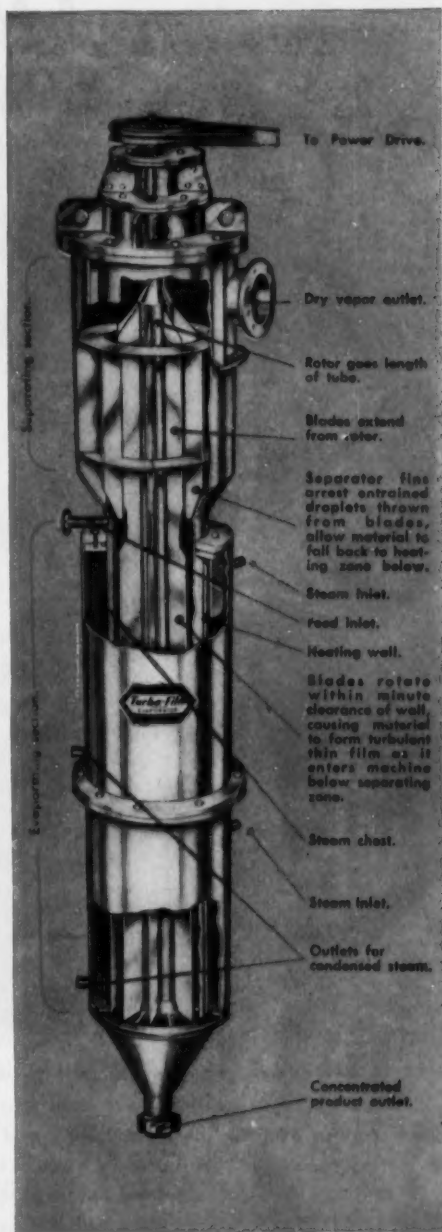
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B & I

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Fertilizer/Pakistan: Construction of both fertilizer and cement units at Daudkhel—with U.S. and Canadian financial participation—will start this month. As its part of the deal, the U.S. is contributing \$12 million to build a fertilizer plant to turn out 50,000 tons of ammonium sulfate annually; Canada is collaborating with the Pakistan Industrial Development Corp. under the Colombo plan, will grant \$5.5 million for cement units to produce 100,000 tons/year. Estimated dates of completion: for the cement works, mid-1955; fertilizer plant, by early 1956.

Aluminum/Spain: Booked as being the forerunner of American and Canadian investments in Spain, Aluminio Iberco is building a new aluminum plant at Alicante, Spain. Designed to fabricate 18,000-20,000 tons of aluminum products annually, Aluminio's ingot will be supplied by smelting subsidiaries of Aluminio, Ltd., Montreal—its parent company.

KEY CHANGES. . .

Ferdinand C. Meyer and Harold L. Hubbard, to assistant directors of research, Monsanto Chemical Co., St. Louis.

Lewis D. Williams, to sales manager, Sumner Chemical Co., New York.

Calvin M. Bolster, to coordinator of development, General Tire & Rubber Co., Akron.

B. M. Downey, to manager of manufacturing and **A. W. Fleer** to manager of research, development and engineering, Shell Chemical Corp., New York.

Alfred E. Driscoll, to president and director, Warner-Hudnut, Inc., New York.

Nicholas F. Pensiero, to director of New Products and Market Research, Oxy-Catalyst, Inc., Philadelphia.

William E. Smith, to assistant sales manager, The Dorr Co., Stamford, Conn.

Edward D. Toland, Jr., J. Robert Matlock, and Rolla H. Stocke, to assistant treasurers, Monsanto Chemical Co., St. Louis.

Alfred T. Loeffler, to vice-president, Chemical Div., Food Machinery and Chemical Corp., New York.

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- a noncorrosive solvent with low toxicity
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- a starting material for insecticide manufacture
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We'll be glad to send you detailed information and sample quantities of Eastman triethyl phosphate for your evaluation. Write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

CHARACTERISTICS

Color, APHA.....	10 max.
Specific Gravity, 20°/20°C.....	1.067-1.072
Acidity, as H_3PO_4	0.03% max.
Boiling Range.....	97% between 209°-218°C
Flash Point.....	240°F
Weight Per Gallon, 20°C.....	8.90 lbs.

Eastman

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Density		X			X
CHEMICAL					
Detergency		X		X	X
Foam	X	X	X	X	X
Foam Stability		X	X		X
Wetting Speed		X		X	X
UNIFORMITY	X		X		X
CONTAINERS					
Suitable for your Purposes					X
SERVICE	X	X	X	X	X
Total Points	<u>5</u>	<u>8</u>	<u>6</u>	<u>5</u>	<u>12</u>

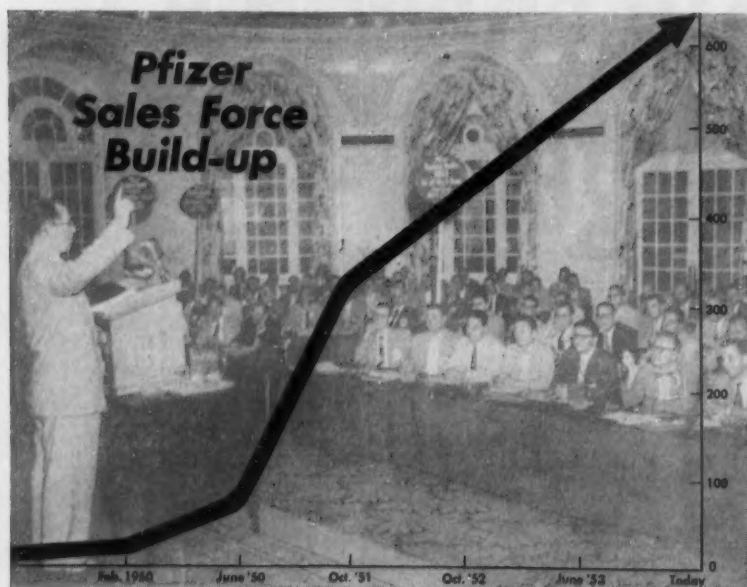
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DISTRIBUTION



IN FOUR SHORT YEARS: A sales force sprouts from 12 to 630 as . . .

A Staff Grows in Brooklyn

A 50-fold staff increase, "blitz" sales methods, "crazy" promotion devices mark Pfizer's spectacular 4-year rise in direct antibiotic sales.

Its latest entry, Tetracycline, in the broad-spectrum antibiotic field may well boost Pfizer's already hefty share of the market.

Next month, the pharmaceutical industry's fastest-growing sales force will mark its fourth anniversary. For although the history of Chas. Pfizer & Co. dates way back to 1849, the company's present sales setup is just about to pass its fourth birthday.

This week, with the addition of two new trainees, the Pfizer field strength has reached an amazing 630.

And although not the largest in the pharmaceutical industry, Pfizer's sales force is doubtlessly the only major team to multiply over 50-fold in less than four years.

CW queried Pfizer Director of Sales and Promotion Tom Bradley as to just how his company built such a sizable sales structure in so short a time; how, since the day of decision back in March, '50, the company has boosted sales in the broad-spectrum antibiotic field second to none.

"Very simple," explains Bradley, who lays claim to 54% of all broad-spectrum antibiotic business, "If you're going to build something worthwhile, it's just like building a good home . . . the most important thing is a good foundation."

From the Ground: Bradley and General Manager Tom Winn—then antibiotic sales manager—began laying their foundation early in 1950, immediately following top management's decision to market the newly discovered Pfizer antibiotic, Terramycin. Prior thereto, Pfizer had been making and distributing penicillin and pharmaceuticals in bulk to other drug houses and wholesalers.



NO BIG CITY PARTY: Pfizer training sessions mean technique demonstrations, product lectures and . . .

But, seizing the Terramycin opportunity, Pfizer used it as the stepping stone into the ethical sales field—selling directly to physicians and pharmacists.

To secure a nucleus force, Winn and Bradley scoured the country. Keeping in mind that their recruits would likely need to be managers as well as salesmen, this is the brand of man they sought.

- One with pharmaceutical, pre-medical or biological training.
- One who was successful in his current work.
- One with a gambling sense, willing to chance his future with an entirely new sales organization.

Winn and Bradley, as a result of their initial efforts, hired about 60 detail men. This nucleus force was then commissioned for the double duties of (1) selling and (2) recruiting and screening new men. In this manner, by the fall of 1951, only 18 months later, the staff had grown to more than 300.

Rate Test: The initial screening passed, a typical Pfizer sales candidate is exposed to a sales evaluation examination system, the brainchild of Bradley. Here's what happens to him:

- He's given a book on company facts and policy—together with certain company product information.
- Three or four days later, he's intensively examined on the reading material.
- As a result of the test, plus consideration of his personal qualities, he learns his initial salary rate.



GUESS AND BRADLEY: No "trainees" on their team.

Bradley, an ardent believer in both study and examinations, uses his system throughout the entire sales force, asserts it serves the dual purpose of (1) keeping his staff well informed, able to discuss latest advances with the medical and pharmaceutical professions, and (2) spurring them on toward earning higher salaries.

Road Test: With his exams passed and salary set, the new man is turned over to Sales Manager George Guess. Shunning the designation "trainee," Guess assigns the newcomer the rank

of detail man (sales representative), places him with a district manager, who is responsible for his progress.

During his initial period of four to six weeks on the road, the new man:

- Makes calls accompanied by either the district manager or one of his top men. (He never calls alone.) Emphasizing the criticality of the training period, Guess believes in giving a man thorough grounding before putting him "on his own."
- Studies Pfizer's complete product information course.



daily examinations—all adding up to graduation diplomas, more study, more exams and "blitzes".



PREMIUM ON FACTS: A good detail man knows his company's products.

• Receives (toward the end of the period) from his future district manager a mapped-out 4-week program of daily calls. (When he goes on the road alone, he'll be required to draw up his own programs.

Back to Brooklyn: A two-week training course at the home office is the newcomer's last lap before striking out for himself. He attends classes with from 35 to 100 fellow trainees, daily from 9 to 5, spends 2 or 3 nights each week in "informal conferences" with top management to absorb policy and the "big picture."

Bradley and his training director Paul Sullivan are in dead earnest concerning the value of the course. Determined that the training program won't be, in Bradley's words, "just another big party in New York, as so many training sessions turn out to be," they start off each day's classes with a written exam.

And in return for his own effort, the class-attender hears lectures that cover a gamut of topics from elementary sales and detailing techniques to discussions on osteoporosis.

For example:

- Experienced detail men describe their personal selling methods.
- Pfizer's clinical staff, hospital service men and product specialists lecture and help orient the students.
- Sales training experts, using films and other training aids, demonstrate Pfizer-approved methods of presenting technical information.

At the completion of the Brooklyn class session, the new man graduates—complete with diploma. The company has spent about three months

at full pay training him. Now he's "on his own."

Not So Crazy: But the neophyte need have no fear of being left entirely to his own efforts in the field. At frequent intervals, he'll be given a chance to prove his progress, bolster his preliminary training.

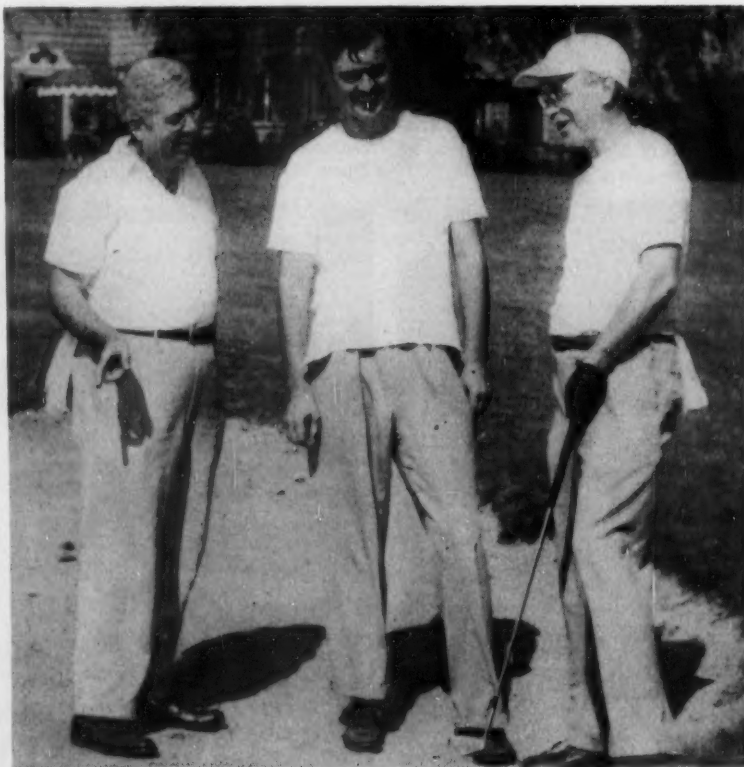
In contrast with the methodical grounding of study and examination used during the training period, some of Pfizer's sales supports are decidedly unconventional. Sometimes termed "crazy" by more conservative competitors, some of the Pfizer schemes have paid off handsomely, according to Bradley.

Take the "Blitz," for instance: a Pfizer technique, its system, defined as saturating a small area by concentrating the entire district sales force efforts, serves a more important purpose. Prime target: to assemble the men for updating and examination. It works, too. With part of next year's salary hinging upon exam results, the men work hard to keep informed.

Too, there's the golf tournaments. Pfizer-sponsored, they serve to provide the men with more doctor contacts, overcome longtime acquaintanceship advantages enjoyed by competition. Right now, district managers are busily lining up spring golf outings.

Other so-called "crazy" activities: country club dances for physicians and their wives, a duck hunting expedition in Arkansas.

Not all Pfizer promotion is social. But even in more professional paths, the company is proud of what it con-



PREMIUM ON FAIRWAY: Cultivating friends is not so "crazy".

**Announcing another new
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JAYSOL

JAYSOL is a proprietary solvent of high quality and closely controlled uniformity specially produced to meet your needs in cellulose lacquer and shellac manufacturing, spirit varnishes, adhesives and textile dye compounding.

Enjoy also announces a full line of specially denatured ethyl alcohols. Like JAYSOL, these new Enjoy products are produced in the most modern plants and backed by continuing research plus 34 years' experience in the petrochemical field.

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Iso-Octyl Alcohol
Decyl Alcohol
Tridecyl Alcohol
Dicyclopentadiene
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DISTRIBUTION

siders "fresh" approaches.

Some of these:

- A \$72,000 medical student scholarship program.
- Summer employment for selected medical and allied students.
- A 12- to 16-page paid-for bound-in insert of medical information in each issue of the Journal of the American Medical Assn.
- A weekly antibiotic newsletter mailed to the physician's home address.

More to Sell: Pfizer has been beefing up its sales line, too. Recent additions beamed at boosting direct sales:

- A steroid hormone line, arranged in cooperation with Syntex, S.A.
- Bonamine, a motion sickness remedy.
- Retail vitamin sales outlets through purchase of J. B. Roerig & Co.

And, possibly topping all these in sales potential, Tetracycline, Pfizer's newest broad-spectrum antibiotic, is currently being readied for distribution. To be marketed under Roerig label, its possibilities are firing the Brooklyn sales headquarters with even more than the usual enthusiasm.

Considering Pfizer's marketing progress over the past four years, it's easy to comprehend Tom Bradley's ebullient prediction: "You watch us. We're going to be the Du Pont of the pharmaceutical business."

For the Bookshelf: Among current literature offerings:

- The New York Quinine & Chemical Works, Inc., offers a folic acid brochure on microbiological method of assay.
- Aceto Chemical Co. (Flushing N.Y.) has available a new technical bulletin on uses and specifications of myristyl alcohol.
- Celanese Corp. (New York City) has issued a 20-page brochure covering the company's complete line of resins.
- S. B. Penick & Co. (New York City) has released a brochure covering the chemistry and hypotensive action of purified Protoveratrin A & B.
- Monsanto Chemical Co. (St. Louis) has published Bulletin No. 0-102 on fumaric acid.

Crown Merger: Crown Cork & Seal Co., Inc. (Baltimore) has merged all wholly owned domestic subsidiary corporations. Included in the merger, aimed at improving efficiency and sales service: Crown Can Co., Philadelphia; Western Cork & Seal Corp., San Francisco; and Crown Cork Specialty Corp., St. Louis. They will be

known as Crown Can Div., Western Div., and Specialty Div.

New Service Lab: Enjay Co., Inc. (New York City) has established a new laboratories unit through Standard Oil Development Co. to provide sales technical service in the chemical products field, specializing in petroleum additives, solvents, chemicals and polymers marketed by Enjay.

Cincinnati Sales: Eastman Chemical Products, Inc. (Kingsport) has opened a new chemicals division sales office in Cincinnati to service customers in the southwest Ohio area.

Polychemicals Laboratory: Du Pont plans a \$3-million laboratory in Wilmington to expand the facilities of its Polychemicals Dept. for providing sales and engineering services to customers in the plastics and allied industries. Its facilities will be several times those of the present laboratory in Arlington, N.J., which the new building will replace.

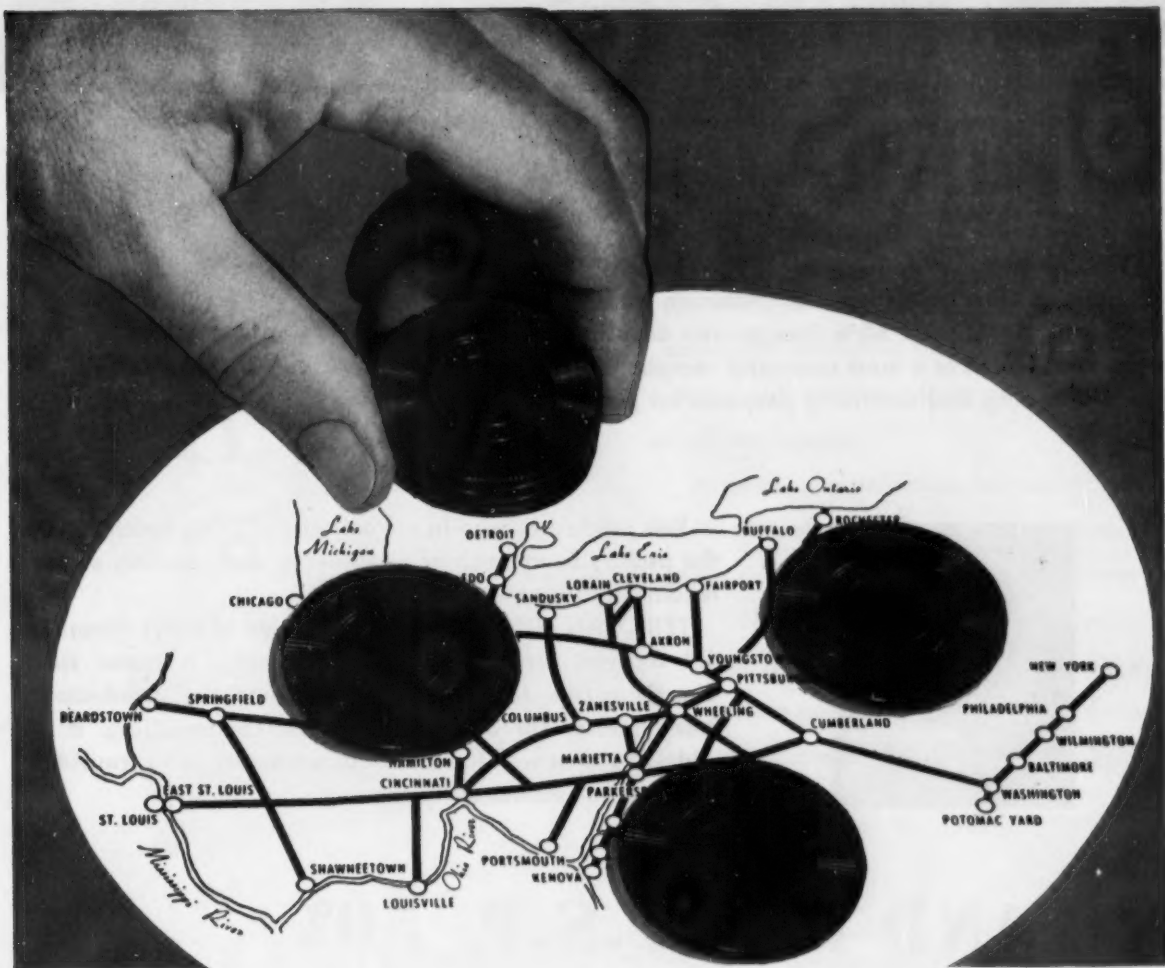
Appointments: The white pigments division of Godfrey L. Cabot, Inc. (Boston) has appointed Morton-Myers Co. (Kansas City, Mo.) and John D. Butts (Pittsburgh, Pa.) to handle sales of wollastonite to the paint industry.

Technical Sales: The E. C. Stone Co. (Denver) has been selected by the Emulsol Corp. as its technical sales representatives in the Rocky Mountain states area for the sale of emulsifiers, detergents, dispersants, germicides and flotation-agents in the industrial and agricultural fields.

Chattanooga Branch: General Dye-stuff Corp. has opened a branch office in Chattanooga, Tenn. Its new 17,500-sq.-ft. building will house the corporation's warehouse and laboratory facilities and will serve as a sales branch for the dyestuff division and Antara Chemical Div.

Packaging Tests: Seven new testing procedures for fiber shipping containers are available free to the members of Packaging Institute. These procedures are standardized methods of testing both corrugated and solid fiber containers as recommended by the Institute's Technical Committee on Shipping Containers.

U.S. Representatives: H. L. Barneby (Pittsburgh) is now handling the sale of Krupp Kohlechemie's SynPar waxes imported from Germany.



Put your chips where the blue chips are!

Along the friendly, modern B&O is many an "aristocrat" of industrial America. The "blue chip" corporations gained eminence through the know-how of production men and the judgment of management. We're proud of the "blue chips" who chose B&O territory for further expansion. They accepted the advice of our specialists in site selection.

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phere ideal for profitable production and sound growth. Our men really "know the ground"—they'll prepare, in confidence, without obligation, a study exactly to your needs.

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Cincinnati 2	Phone: Dunbar	2900
Chicago 7	Phone: WAbash	2-2211



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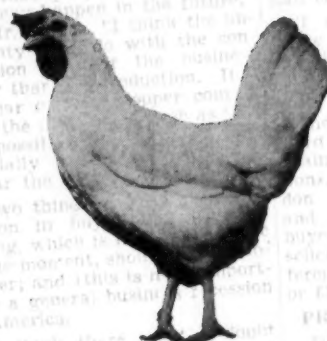
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ONYX OIL & CHEMICAL COMPANY

TETROSAN 60%

A very effective germ killer with extensive veterinary applications in disinfection, deodorization and preventive antiseptics, TETROSAN 60% has proven especially useful on a broad basis in a most successful compounded product for disinfecting and sanitizing purposes on poultry farms.



This product is used in almost all sanitizing functions on the poultry farm, such as in spraying and washing coops, feeding and watering troughs, etc.

TETROSAN 60%, an aqueous solution of alkyl dimethyl 3,4 dichloro benzyl ammonium chloride, is never sold directly to the consumer, being sold to the disinfectant manufacturer for diluting or further compounding. It is widely used as well for numerous antiseptic and germicidal purposes in pharmaceuticals.



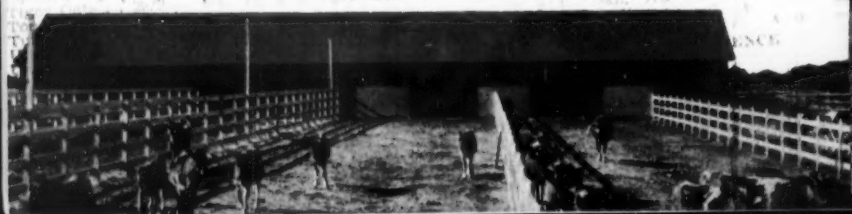
BTC AND BTC U.S.P. 50%

For many years a leading quaternary for dairy industry sanitizing, BTC 50% has maintained its leadership through a rigid and unrelaxing program of quality control.

Every batch of BTC 50% which goes into sanitizers for dairy farms and milk plants greatly exceeds the minimum standards for bacteriological effectiveness. A staff of bacteriologists tests against the standard organisms, *Staphylococcus aureus* and *Salmonella typhosa*, and chemical and physical properties are equally closely controlled.

There is no doubt that the assurance of quality resulting from so stringent a check is responsible for the wide popularity of BTC, not only in the dairy industry but also for other bactericidal and deodorant applications, from food handling and processing to surgical sterilization. There is also a U.S.P. grade of BTC which meets specifications for Benzalkonium Chloride.

If you must be sure in quaternaries—and you must—use ONYX.



ONYXIDE

Effective slime and algae control in swimming pools, cooling towers and air conditioning equipment has become simple and easy with the use of compounds based on ONYXIDE 75%, a mixture of alkenyl dimethyl ethyl ammonium bromide.

Fully compatible with alkalizing and flocculating agents commonly used in swimming pools, cationic ONYXIDE is relatively non-corrosive to metal and natural rubber and may be used on all equipment.

Its germicidal properties are rapid in action, it is virtually odorless and colorless, non-volatile and non-toxic in use dilutions.

ONYXIDE in use dilutions has also proven itself as a sanitizer and as a general disinfectant and deodorizer and as a bacteriostatic treatment for textiles. Write for samples and complete data.



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An excellent fungicide widely used in the control of athlete's foot and dandruff, ISOTHAN Q-15 is a 20% concentration of lauryl isoquinolinium bromide.

ISOTHAN Q-15, a surfactant compound cationic in nature, assures even in dilute solution complete and rapid wetting and penetrating properties. It is a deep amber water-soluble liquid with a pleasant characteristic odor, is non-volatile and non-toxic in use dilutions.

In addition to athlete's foot and dandruff, ISOTHAN Q-15 has also been found effective as an agricultural fungicide, particularly as a protective and eradicator agent against apple scab.

THE LENGTH OF LETTERS

In future, no letter to the Editor will be published unless it is accompanied by a return address which is not too long.

Each letter be not be reduced to that length.



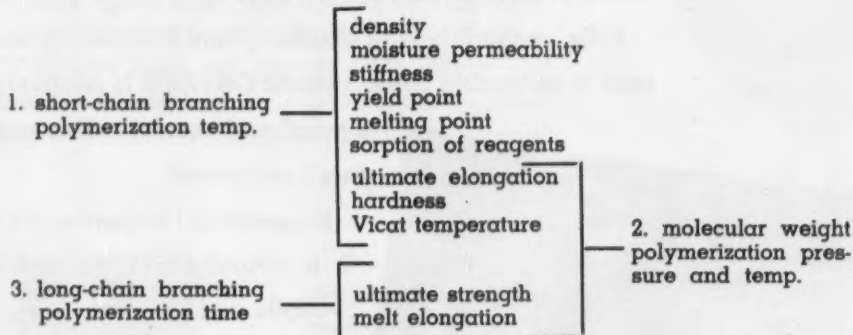
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Master Pattern for Tailor-made Polyethylenes

These three factors, governed chiefly by the noted synthesis conditions, control the physical and mechanical properties of polyethylene.



With the newly discovered short-chain branching effect, the physical and mechanical properties of a polyethylene may be predicted from a knowledge of two factors: molecular weight and extent of short-chain branching.

Each factor . . .	Measured by . . .	Is related to . . .	In this way
molecular weight	melt viscosity (mv)	melt extensibility ultimate strength	$\log(me) = 4.8 - 0.61 \log(mv)^\dagger$ $us = 346 \log(mv) - 320^{\dagger\dagger}$
short-branching	density (d)	stiffness yield point cloud point reagent sorption hardness	$\log(s) = 26.4(d)^* - 19.9$ $yp = 69600(d) - 62300$ $cp = 728(d) - 586$ varies with reagent $h = 1160(d) + 2.8 \log(mv)^{\dagger\dagger\dagger} - 1,000$
both factors			

[†] Applicable for log melt viscosity from 5 to 6.

^{††} Applicable for log melt viscosity from 3 to 8.

^{†††} Applicable for log melt viscosity from 1 to 7.

* All equations containing (d) are applicable for the density range 0.90 to 0.94.

By careful manipulation of polymerization conditions, in line with the above-detailed principles, structural factors may be controlled to give products ranging from waxes to tough plastics, from flexible to stiff polymers, and from plastic to elastic melts.

Short Chains: Key to Polymer Control

A new explanation of polyethylene's physical and mechanical behavior has been pieced together by a team of Du Pont research chemists.

Key: short-chain branching. Here's how it fits into the development of new and improved polyethylenes, bears upon research with other polymers.

Trial and error may be fine for most fields of invention, but it doesn't go very far in polymer chemistry; there are too many variables. For the industrial polymer chemist, the ultimate would be achieved by having a simple

equation to relate each physical and chemical property to a specific structural feature and an easy operation for each type of structural alteration. To tailor a polymer to desired specifications, he could calculate the right

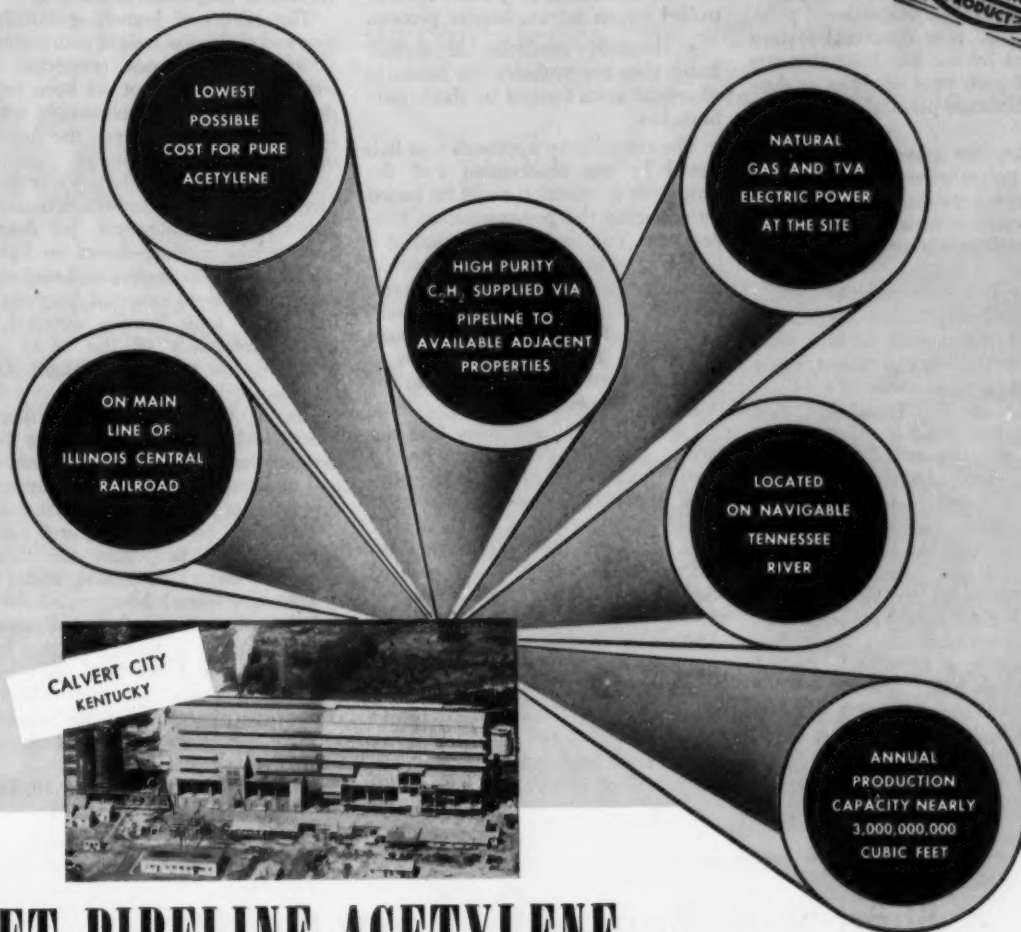
structure, set up the proper reaction conditions and be sure of results.

The ultimate is still a long way off; but a forceful stride in the right direction has been engineered by a seven-member team of Du Pont Polychemicals Dept. researchers. Reported last week in the scientific literature,* their polyethylene probes are the foundation for solid progress in several areas of polymer technology.

Cornerstone of the pioneering re-

* *Journal of the American Chemical Society*, Vol. 75, pages 6110-6133.

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National Carbide is one of the world's largest producers of calcium carbide and acetylene. If you are a user—or potential user of acetylene, you will do well to discuss your requirements with a National Carbide representative—or write for "The Chemical Century Comes to Calvert City", by the Agricultural and Industrial Board of Kentucky.



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sults is the discovery of short-chain branching and its impact on the physical and mechanical properties of polyethylene. The new structural feature was found by the Du Pont chemists to control such vital qualities as density and moisture permeability, among others.

Hitherto, the physical differences among polyethylenes polymerized under varying conditions were generally attributed to variations in molecular weight distribution and long-chain branching.

To test the long-chain branching theory, Du Pont's Milton Roedel set up several experiments in high-pressure polymerization equipment, using peroxide catalyst in a solvent medium. Proceeding on the knowledge that long-chain branching is a function of polymer concentration (which, in turn, hinges on polymerization time), Roedel held temperature and pressure constant, varied reaction time.

Results needed explaining: tensile strength and melt elasticity of the products varied widely; density, stiffness, melting point, and moisture permeability were unaffected.

Very briefly, a hypothesis shaped up along these lines:

- Polymer concentration influences long-chain branching—an intermolecular process.

- Since these properties (density,

stiffness, etc.) are independent of polymer concentration, they must be controlled by an intramolecular process.

- Normally attributes of crystallinity, they are probably the earmarks of crystal areas formed by short-chain branches.

The crystallinity approach was bolstered by the observation that the properties in question could be varied by changing the polymerization temperature. To clinch the proposal of a new kind of branching, a plausible explanation (*see box, below*) of intramolecular branching was worked out. Favorable from a thermodynamic standpoint, the new mechanism is based on the formation of a transient ring by the polymer chain.

Fitting this key discovery into the broad picture, researcher Roedel states: "... to describe fully the physical properties of any particular sample of polyethylene a minimum of three parameters is required: the average molecular weight, the degree of short-chain branching, and the degree of long-chain branching.

"Because of these three independent parameters," continues the Du Pont chemist, "products can be synthesized ranging from waxes to tough plastics by control of molecular weight, from flexible to stiff polymers by control of short-chain branching,

and from plastic to elastic melts by control of long-chain branching."

The effects of branching distribution and molecular weight distribution, which may influence properties to some degree, have not yet been fully defined. But the Polychemicals team has thoroughly covered the newly opened branching territory.

William Bryant and R. Voter profiled the extent of short-chain branching; Frederick Billmeyer, Jr., developed a new method—based on light-scattering measurements and viscosity determination—to pinpoint long-chain branching; John Beasley detailed a kinetic treatment of the effect of branching on molecular weight distribution.

Finally, Carleton Sperati, William Franta and Howard Starkweather, Jr., defined the effect of chain branching and molecular weight on the physical properties of polyethylene. Their work gives a clear picture (*see chart, page 44*) of which properties the three molecular factors determine, and (in quantitative terms) how.

Taken together, the individual pieces of research detail a pattern for tailoring new and improved polyethylenes. Opportunity for improvement is most sharply focused on the properties over which the new short chains hold sway.

Straw in the wind: Alathon 10, Du

Short-chain branching—a new concept in polyethylene chemistry— is triggered by a hydrogen jump.

- 1** It starts when the terminal carbon atom of a growing polymer chain . . .
- 2** Snakes back to grab a hydrogen atom already held by another carbon in the chain.
- 3** For an instant both carbon atoms share the hydrogen, forming a ring that . . .
- 4** Quickly breaks when the terminal carbon takes complete possession of the hydrogen.
- 5** A new long chain grows when other ethylene molecules hook on at the site vacated by the hydrogen . . .
- 6** Leaving a short branch made up of the three or four carbons that were in the ring.

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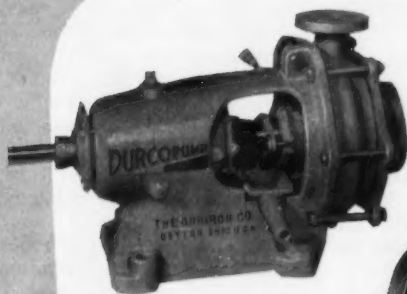
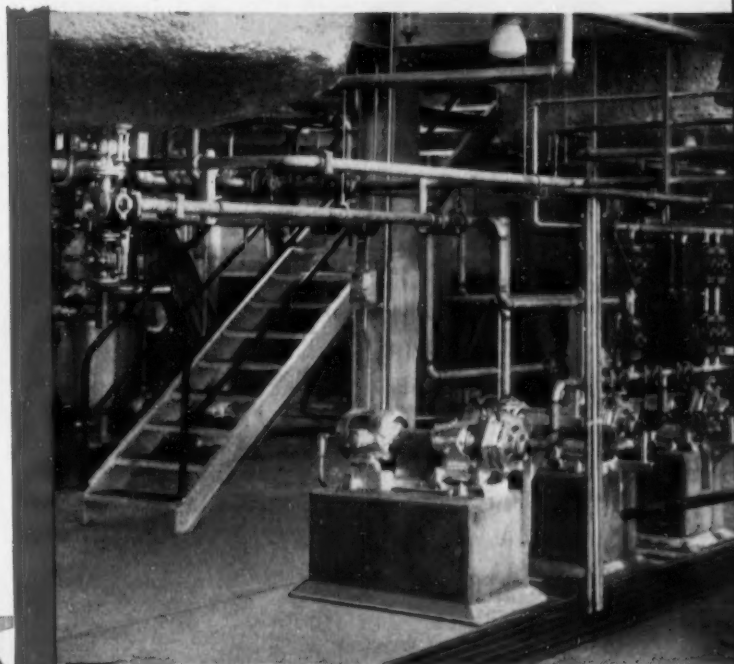
Kodak

TRADE-MARK

In their new Elon facilities at Kodak Park, Eastman Kodak Co. uses Durco corrosion resisting pumps and valves to handle crude Elon, a developing agent, in the various stages of purification.

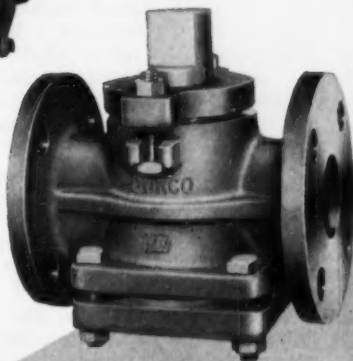
Series R Durcopumps and Durco Type F valves (both shown) can be depended upon for long, trouble-free service. These heavy duty chemical pumps are available in 12 standard Durco alloys to provide the best possible service in various corrosive conditions. The Durco Type F valve is an easily operated, non-lubricated, maintenance-free plug valve. Built of Durco corrosion resisting alloys, with a Teflon®* sleeve, it has proved outstanding in hundreds of applications.

*Registered trademark of E. I. du Pont de Nemours & Co. Inc., for its tetrafluoroethylene resin.



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Durcopump Bulletin P/1 and
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THE DURIRON COMPANY, INC., DAYTON, OHIO

Pont's newest polyethylene, is a marked improvement over its fore-runners, Alathon I and II, in stiffness, moisture permeability, softening temperature, thermal stability, film transparency, gloss, brittleness temperature, and grease resistance.

Gained solely from studies of polyethylene, the findings nevertheless have broad polymer significance. They might easily encompass the vinyls, styrenes and acrylics, help chart a course for future research in each of these fields.

Glycerine Boosters

After a hearty luncheon last week at New York's Waldorf-Astoria Hotel, five chemists departed from the premises richer by a total of \$1,500. Winners of the 1953 research awards of the Glycerine Producers' Assn., they were selected for their pioneering work on the use of glycerine in biochemical research and textile technology.

An annual affair, the awards are the result of a desire to hypo glycerine research, spur broader utilization of the polyol.

Canadian chemist Erich Baer, a University of Toronto professor, carried off first prize (\$1,000 and an honor plaque) for his work on the synthesis of glycerolphosphatides. Baer duplicated a group of biological glycerine derivatives present in animal cells (liver and brain), but extremely difficult to isolate from these natural sources.

By comparing the natural compounds with his synthetics, he has been able to establish their chemical configuration for the first time. Thereby he has opened the door to further fundamental studies by biochemists, enzymologists and serologists. This, in turn, could lead to a better understanding of how the body converts food into flesh.

Although the prime importance of the Canadian scientist's work is in pure research, it has already found practical application. Some of his synthetic compounds are substituting for natural substances where the use of pure phosphatides is advantageous. Synthetic L- α -(dimyristoyl)lecithin, for example, is rapidly replacing beef-heart lecithin as an antigen in the serodiagnosis of syphilis.

Tagged: Second award (\$300 and honor plaque) was shared by Brookhaven National Laboratory's Lewis Gidez and Harvard Medical School's Manfred Karnovsky. They developed methods of inserting radioactive carbon into glycerol and glycerides,

employed the resulting tagged compounds for investigations of metabolism in laboratory animals.

Recipients of the third award shared \$200 (and plaque) for research of a more industrial nature. The two—Albert Nuessle and Russell Crawford—did their research for Rohm and Haas Co. (Philadelphia), discovered that a crisp, washfast finish could be imparted to nylon fabric, particularly nylon lace, by treatment with polyacrylic acid and glycerine.

Function of the glycerine is to prevent excess acidity caused by the use of polyacrylic acid alone. Of various alcohols and amides tested, they report, glycerine is most effective in this textile treatment—from the standpoint of crispness, durability and freedom from discoloration.



BAER: For biological studies, synthetic door openers.

Atoms to Amperes

Hurdling one of the last fundamental barriers to practical atomic power, Radio Corp. of America has developed a device to convert nuclear radiation directly into electricity. Significant to industry as a whole, the achievement has special meaning for the chemical industry.

Reason: pure silicon, now in its commercial infancy (CW Jan. 30), is the heart of the new electrical source.

In loose terms, the RCA device may be likened to an atomic battery. It consists of a semiconducting crystal wafer of pure silicon containing a patch of antimony and coupled to a layer of radioactive strontium. The strontium isotope—waste from nuclear reactors—bombards the wafer with electrons, which release more electrons from the silicon. As this flood of electrons crosses the silicon-anti-

mony junction, it produces a voltage that makes current flow in an electronic circuit. Thus far the battery has succeeded in generating only a tiny current.

The entire process, known as the electronic-voltaic effect, has traditionally been little more than an intriguing quirk of solid-state physics. This is its first near-practicable application.

Primarily the baby of RCA physicists Paul Rappaport and Ernest Linder, the atomic battery is not the immediate answer to low cost atomic power for industrial and municipal consumption. Its primary applications will be in liberating small units of electrical equipment from conventional power distribution systems. Electronics experts see the new invention as the forerunner of canned power units for home appliances, aviation and communications equipment, etc.

But don't look for widespread use in the very near future. Rappaport and Linder caution that problems of "staggering complexity" must be overcome before the device could be used to power a washing machine, for example. Cost is not expected to be a handicap.

Climax of a 40-year dream of experimental physicists, the battery introduces a new factor to the embryonic atomic power picture. Up to now, fissionable material has been thought of as merely a powerful new fuel for conventional power generation; the atomic battery, if it could ultimately be put to heavy duty, would do away with boilers, engines and generators.

New Standards: Three new compounds swell the list of American Petroleum Institute standard hydrocarbon samples to 221. The trio: 3-methyl-*trans*-3-hexene; 3-ethyl-1-pentene; and vinylcyclopentane. They may be had from the petroleum research laboratory of Carnegie Institute of Technology (Pittsburgh, Pa.).

Tracers: A new batch of radioactive compounds is now available from Bio-Rad Laboratories (Berkeley, Calif.). Included: ethionine, α -aminobutyric acid, dihydroxyphenylalanine, caffeine, and tyramine. All are labeled with carbon-14.

Atomic Brew: Reynolds Metals Co. has launched a research project to investigate the sterilization of beer by radiation. Reynolds' interest: if production line radiation sterilization proves out, aluminum might well become the best metal for beer cans, barrels and bottle caps.

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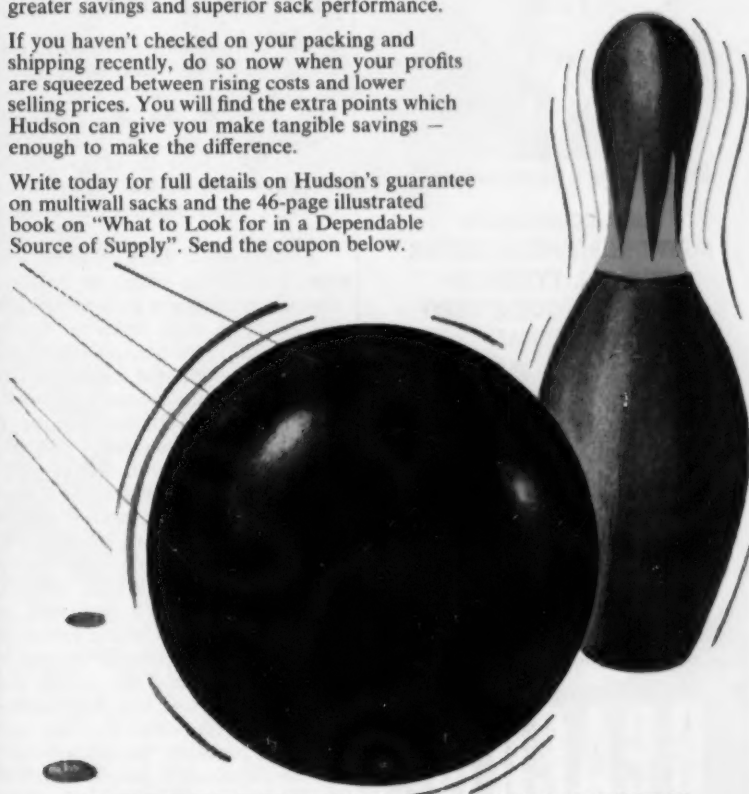
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RESEARCH



USC'S BURG: Needed—applications of new principles.

New Boron Bond

Boron, to University of Southern California's professor Anton Burg, is more than element number five in the periodic table; it's his life's work. For more than 20 years, Burg has probed the chemical behavior of the metallic substance—first at the University of Chicago, more recently in southern California.

By this week, Burg's fundamental researches had a swarm of industrial companies beating a path to his door. The lure: a new series of boron-arsenic and boron-phosphorus trimers that exhibit high heat resistance. Still very much in the research stage, the new materials hold the promise of blossoming into commercial property.

Right now, however, they're giving the theorists something to mull over. Burg claims that no one has bonded boron to arsenic before, avers that he has uncovered a wholly new type of chemical bonding. Where bonding boron to phosphorus is concerned, he reportedly prevailed where earlier attempts were only partially successful.

What he actually did, in the case of phosphorus, was to react dimethyl phosphine with boron hydride, convert the resulting phosphinoboranes into tough polymers. And starting with dimethyl arsine, the California chemist linked boron to arsenic.

Jobs Open: Industrial interest in the new polymeric materials is understandable. The creation of stable bonds in such inert inorganic substances opens the door to the development of heat-stable polymeric materials to fill a spate of applications that are now closed to plastics. Some of Burg's laboratory products withstand heating to 700 F.

Stability, paradoxically, is the chief obstacle to the development of high phosphinoborane and arsenoborane polymers. Although the trimers are very stable, and tetramers slightly less so, higher polymers break down quite readily. But this is not necessarily a tremendous handicap; cross-linking may well be the key to durability in the elevated molecular weights. However, at present, cost appears to be a not insignificant hurdle.

As far as Burg is concerned, these are problems for others to solve. "We have . . . proved," he asserts, "that direct chemical bonding of boron with phosphorus or with arsenic can be very strong. It is up to others to develop the practical or industrial applications of our new principles."

Reactor Plans: A nuclear reactor is in the works for Pennsylvania State University. To be the second reactor for which the Atomic Energy Commission expects to authorize fissionable fuel, the planned pile will be used for nuclear research and instruction. It's being financed by the university to the tune of about \$250,000. The first privately owned educational reactor began operating last September at the University of North Carolina.

Blocking Progress: Robert Hienton, vice-president of Cleveland Electric Illuminating Co., sharply criticized his suburban Bay Village neighbors last week for their opposition to the establishment of a Union Carbide research building in their community. Hienton berated the opposing group for not sticking to the facts in their published literature, pointed out that several other communities in the area would welcome research laboratories.

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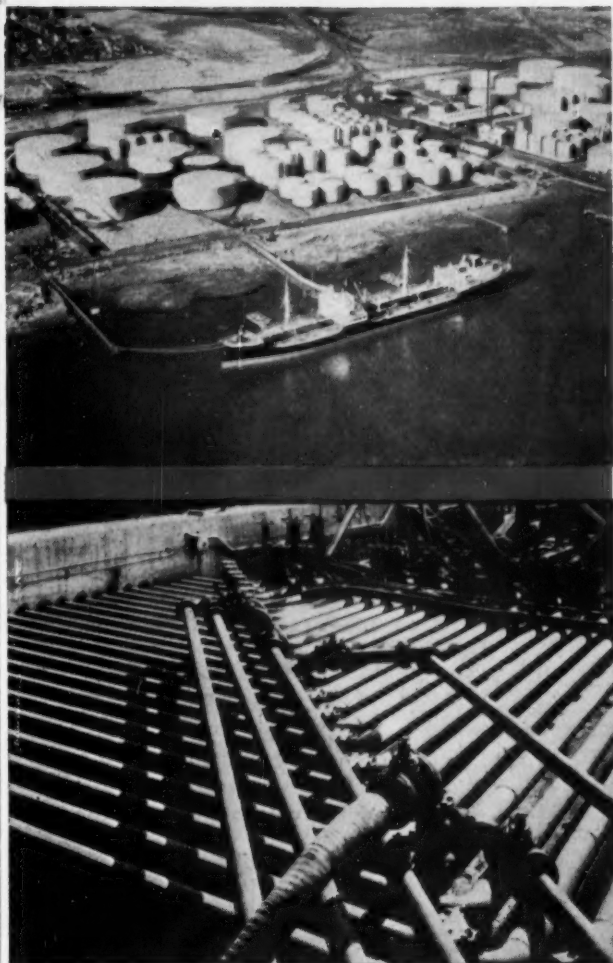
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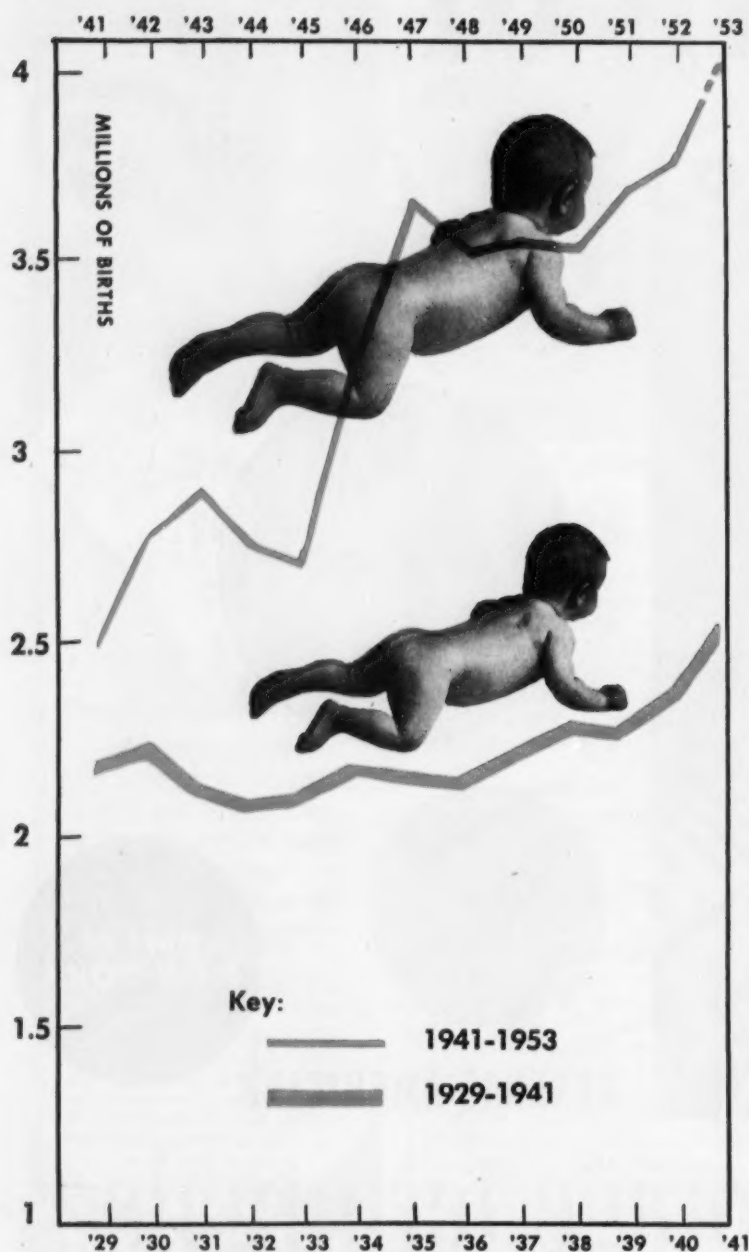
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SPECIALTIES



BABY BONANZA: Clue to 1941-1953 steeper slope: better wages, better medicines.

The Taste Is the Thing

Although final figures aren't in yet, it looks as if 1953 was another record breaker: the Health, Education and Welfare Dept. estimates that some 4 million babies were born in the U. S. last year. And since these youngsters mean a booming potential market for

medicines,* few groups are more enthusiastic about them than pharmaceutical houses.

For in addition to being a top year babywise, '53 was the seventh straight

* Estimates are that each baby in the neighborhood means \$100 of sales a year to the drug store of his or her parents' choice.

year that U. S. births have totaled more than 3.5 million. It's all part of a population zoom that brings smiles to pharmaceutical sales managers.

Factors responsible for the growth include the tendency toward families of two, three, and even more children and the general prosperity of the last decade. But also responsible is the life-saving role sulfa drugs, antibiotics and other medical advances play in our lives.

"The 1950 census turned up an unexpected extra million population, which could be accounted for only by the latter developments," says Irving Quackenboss, director of the baby products division of Johnson & Johnson.

Quick to grasp the meaning of this influx of newborn have been pharmaceutical firms. Today they get maximum marketability out of their products by preparing them in forms to which children have little objection. In nearly all types of pediatric products "the taste is the thing". The result: it's getting so children dislike medicine about as much as they dislike candy.

Good examples are the broad spectrum antibiotics, Aureomycin, Chlormycetin, and Terramycin. All have been made available in pleasantly flavored suspensions for children. (It's estimated there are now some 40-million under the age of 14).

But it's not only the youngsters who are pleased with this new trend. Benefiting from it also are those adults who have difficulty taking pills or capsules.

Here's a brief review of the strong interest some firms are taking in the pediatric field, particularly as far as flavoring is concerned:

Taste Panel: A leader is Lilly. It has its pediatric medicines taste-tested by a "junior" panel of taste experts (*see cut*). Cute and clever as this may seem, Lilly has found that its youthful jurors have taste preferences that are definitely different from those of grownups.

Among the products Lilly markets for pediatric use are these:

- Ilotycin, the new wide-range antibiotic Erythromycin. It's an oral suspension and is cherry flavored.

- Ilotycin-Sulfa, Erythromycin combined with sulfadiazine, sulfamerazine and sulfamethazine. It's also a liquid, has a custard flavor.

- Suspension Sulfa-Neolin (Benzethacil with three sulfonamides). The flavor: chocolate-mint. Others are sulfa combinations, penicillin -G, anti-

Vulcanization Accelerators

In the manufacture of thiuram sulfide type of accelerators as well as dimethyldithiocarbamic acid metal salts.

Fungicides & Insecticides

In the manufacture of the zinc and iron salts of dimethyldithiocarbamic acid which is used in the form of its zinc and iron salts as agricultural fungicides.

In making the new systemic insecticides, such as octomethylpyrophosphoramide.

Fuel

Internal coolant to improve the performance of reciprocating engines.

Dyes, Drugs, Pharmaceuticals

In the synthesis of caffeine, aminophylline, theophylline, and vasoconstrictors.

In the manufacture of anti-malarials and long-chain quaternary ammonium compounds.

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Catalysts & Accelerators

As catalysts where alkaline conditions are required for polymerization.

Textiles

To improve affinity of cellulose acetate rayon for direct cotton dyes.

In the manufacture of long chain quaternary ammonium compounds for use as softeners, lubricants, and water-proofing agents.

Leather

For use in unhairing hides.

Surface-active agents

In the manufacture of amide and sulfonated amide-type detergents and surface-active agents.

Polymerization Inhibitor

Inhibits polymerization of unsaturated hydrocarbons during distillation.

Used as a stabilizer for certain types of resins.

Used to reduce webbing of natural and synthetic rubber latexes during dipping operations.

Other Uses

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histamines, vitamin mixtures, a sugar-free cough remedy for diabetic children, immunizing agents and sedatives.

Also a leader, Lederle offers its November-born antibiotic, Achromycin tetracycline, in a dispersible powder, calls it Spersoids. Aureomycin is offered in the same form. Both are chocolate-flavored and may be mixed with milk, water, other beverages or food. Aureomycin is formulated also in oral drops that Lederle says are tasteless and colorless.

Lederle's main multivitamin, Vi-Magna, comes in two forms made especially for children—an orange-flavored syrup and granules that can be stirred in with milk or put on top of cereal.

More than a Quarter: On vitamins, Lederle reports that children's vitamin sales constitute 25-35% of the annual total. "It's a dynamic situation now," Lederle says, explaining that whereas in the past sales were mostly in the winter, today they have become a year-round thing.

Hoffman-La Roche makes two items for children—an orange-flavored vitamin combination called Vi-Penta and Gantrisin. (Vi-Penta tastes "especially good because synthetic vitamin A eliminates fishy burps and after-taste.")

Since it hit the market two years

ago, Gantrisin has become the leading single-prescription sulfonamide. For youngsters it's available in a raspberry-flavored suspension and a chocolate-flavored syrup.

"Delicious, raspberry-flavored" is the way Pfizer advertises its Terramycin pediatric drops and Terramycin oral suspension. Orange-flavored Candettes, troches containing bacitracin and polymyxin B, is another product Pfizer has for children. It also has a peach-flavored suspension for Permapen, its tradename for DBED (dibenzyl ethylenediamine dipenicillin G).

Early last month Upjohn brought out a potassium penicillin (fast acting where DBED is slow and prolonged) oral suspension called Readicillin. Equally new at Upjohn is Syrasulfas, a fruity-flavored three-sulfonamide syrup.

Parke, Davis has Chloromycetin palmitate in a custard-flavored diluent. For infant epilepsy it makes Dilatin Infatabs, which are "palatably" flavored and which come in tablets that are heart-shaped. (Of the various Parke, Davis pediatric products that include vitamins and vaccines, only one is more than 10 years old.)

A veteran in the pediatric field, Squibb has a preparation of streptomycin sulfate as well as cough syrups, cod liver oils, toxoids, vitamins, protein-carbohydrate-vitamin mixtures,

sedatives, to name a few.

Abbott has a line of Dulcets, small cubes that melt on the tongue and taste like hard candy. Offered in this form are penicillin, aspirin, vitamin B 12, Diazoline—a sulfadiazine, sulfa-thiazole duplex, phenobarbital, and Tridione, an anti-epileptic. In addition it has vitamins and Erythrocin.

Not Universal: Not all companies share the belief that medicines given to children should be pleasant to take. One large maker of aspirin sees the trend as a dangerous one—the idea being that medicine is medicine and candy is candy.

And there are pediatricians who foresee cases of children possibly losing their lives from overindulging in what they thought was candy but what in reality was potent medicine. However, in the '30s a Chicago pediatrician went on record with this statement: "He who frees childhood from that terror, nasty medicine, will be a benefactor of mankind."

That's the way most drug manufacturers look at it. And no one hears any complaints from children. As it turns out, they benefit healthwise just as medicine-makers benefit dollarwise. Such a combination would be hard to beat.

Carbonless Copying

National Cash Register Co. last week hoisted the curtain part way on its new "carbonless" carbon paper (CW Newsletter, Jan 16). Tagged NCR paper, it's designed for making multiple business forms and letters. National will market it in limited amounts this year.

The copying effect is obtained by treating the underside of the top sheet with a colorless fluid, and the upper-side of the second sheet with a special claylike coating. Pressure of a pencil or typewriter key results in a reproduction on the second sheet, in familiar blue, of the marks on the top sheet. Up to four copies can be made by hand; seven by electric typewriter. Paper is virtually smudgeless, and erasing on NCR copies is as easy as on ordinary carbon copies.

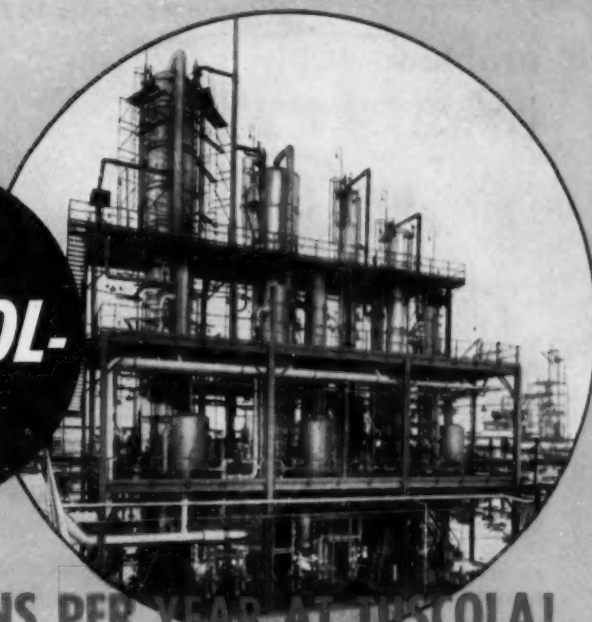
Essential in the development of NCR (for National Cash Register, and for No Carbon Required) Paper has been a large Midwestern chemical firm. It has worked with National for the past two years on the project. National, which started work on NCR Paper in '39, says it's covered by more than 40 patents. Under present plans, the paper will be treated at the mills with chemicals made at National's Dayton, O., plant.



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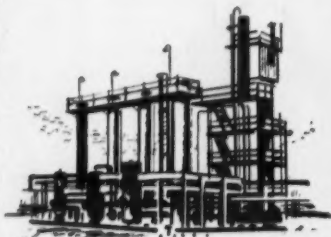
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SPECIALTIES



TOBACCO SPRAYING: For stunting "suckers", maleic hydrazide.

Chemical Field Hand

Registered by the U.S. Dept. of Agriculture just last fortnight was a new application for the growth regulator maleic hydrazide, Naugatuck Chemical's MH-30. Using a procedure worked out by the department's J. C. Gaines, the chemical can virtually eliminate tobacco plant "suckers."

This new chore for maleic hydrazide, which has already been o.k.'d for slowing down sprouting of onions and potatoes, may turn out to be one of the top outlets for the chemical. At least that's what Naugatuck (Div. of U.S. Rubber Co.) is hoping.

Some four years of experimentation on MH-30 is behind its choice as a sucker cure. Gaines and his crew at the Coastal Plain Experiment station of the USDA (Tifton, Ga.) sought to eliminate the laborious, expensive job of pulling the strength-sapping shoots off the plants.

Now, Gaines' work shows a farmer can do away with the suckers with one spraying of maleic hydrazide, costing about \$15/acre. But because the procedure is new, Gaines emphasizes that care must be taken in application.

Matter of Timing: One of the most important factors in applying the maleic hydrazide is timing. The chemical is most effectively used when the majority of the plants are in full flower. At that time, use of 5½ pints of the maleic hydrazide, in about 30 gal. of water, will halt sucker appearance, without noticeably affecting the mature tobacco leaves.

Mechanics of the sucker prevention appear to be like this: the chemical is translocated throughout the plant, preventing cell division and hence production of new leaves and sucker sprouts. No adverse influence in grade and yield have been observed in using MH-30.

On fields where the plants don't seem to be maturing at the same time, suggestions are to top and sucker the plants by hand early in the season, try the MH-30 later. And use of the chemicals before rains isn't advised—it's suggested that weather forecasts be taken into account before spraying, since rain washes the maleic hydrazide off, making it ineffective (although not causing damage).

Prudent use of maleic hydrazide, Naugatuck feels, will give the grower confidence in the product. And that could mean a steady market for plenty of the chemical—for the U.S. plants over 1.6 million acres of tobacco every year.

Three-D Paint

Looks as if the paint trade is about to get its second jolt from Sherwin-Williams. On the heels of its Applikay paint for use with Kem-Tone, S-W is planning another interior paint innovation.

Newcomer Opal-Glo (CW Newsletter, Jan. 30) presents a new approach in use of aluminum powder and colored pigments to give illusion of depth.

Opal-Glo, unlike conventional alumi-



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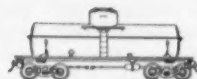
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SPECIALTIES

num coatings, doesn't aim for high reflectivity. Instead of seeking to get the metal particles to lie flat and give a plating-like effect, Opal-Glo keeps them on edge. The result is a certain degree of internal reflection that gives the effect of depth.

S-W will probably offer the new paint in seven or eight basic colors; it claims the combination of pigment and aluminum gives a finish that is nonglaring under natural or artificial light.

Brush Up: A special technique of application is necessary with Opal-Glo. It's brush applied. Then it's rolled to smooth it and to orient the metal flakes. To insure that the "nap" is uniform, only upward, one-direction roller strokes are recommended.

The inclusion of a metallic powder has produced a paint with "exceptional" hiding power—on a smooth surface, a gallon is said to cover 850-1,000 sq. ft. Ordinarily, the paint dries overnight, and is washable.

Though S-W apparently figures the market for Opal-Glo is big, it will not promote the new paint for the home user. When it introduces it, expected shortly, professional painters will get first crack at it. It seems particularly well suited for commercial establishments.

Two for '54: Just a few weeks ago, Sherwin-Williams introduced a translucent, opalescent paint of another sort, called Applikay. It is specifically designed for use with S-W Super Kem-Tone latex paints—for best durability, Applikay must be applied to the latex paint within three days after it has been put on, and before it has cured. Like Super Kem-Tone, Applikay is easy to get out of the roller—it can be washed out in warm water to which vinegar has been added.

Essential to Applikay effect is the method of using it. S-W has worked out a special applicator for the job. It has two rollers on one handle. One roller is plastic, with a design embossed on it. The other roller, which is in contact with the first, is fabric-coated, picks up the paint from the tray and spreads it onto the first roller, from which it goes onto the wall.

Five designs, of nongeometric configuration, are offered in plastic rollers by S-W. There is said to be no need to line up or match designs—figures are created to eliminate that. S-W says that to base-coat and decorate a room with its Kem-Tone and Applikay should cost about \$15.

The do-it-yourself trend in current American homemaking has created a big market for paints. With these two

new products, it appears that Sherwin-Williams and its associated companies* are out for a good share of it.

Air Lift: Farmers of Central Florida are now trying to give their crops a lift with plane-applied fertilizer. The growers, around Ocala, Fla., are having fliers spray on a liquid solution containing about 21% nitrogen—dosage figures out to about 50 lbs. nitrogen/acre. Effectiveness of the system, which calls for specially converted planes, hasn't been determined yet. So far, costs run about \$1.75/acre for application, plus about \$7 worth of the nitrogen.

Slick Striping: Louisville, Ky., Mayor Andrew Broaddus says his city has a problem: the paints used to mark the street crosswalk lines are slippery when wet. So far, officials haven't found a paint that will stay nonskid, although they apparently haven't yet tried using glass beads or sand in the paint.

Hot-air Handwash? One way to get around the increasing problems of supplying cities with water is to cut down on per capita consumption of it. And one way to do that, industrial designer R. Buckminster Fuller suggests, is to find a substitute for soap and water.

Apparently quoting a research team that had interviewed some Chicago dermatologists, he noted that there's "nothing worse" for the skin than soap and water. In its place he thinks high-pressure air might do the trick.

Fire Damage: A fire of undetermined origin caused an estimated \$15,000 damage to Barker Chemical Co.'s plant near Sodus, N. Y. The firm makes agricultural sprays and dusts.

Profit on the Upgrade: Unit sales of the Glidden Co. have reached a new high for the fiscal year that ended last Oct. 31. The record year sales totaled \$211,758,522, a 4% increase over last year. Profits also climbed: net was \$7,109,272, compared with \$6,948,805.

Room to Grow: Regional offices and warehouses of Minnesota Paints, Inc., are being moved from St. Joseph, Mo., to Oklahoma City, Okla. The firm will occupy a new, \$116,000 building laid out to give 17,000 sq. ft. warehouse

* Applikay will also be offered by Acme Quality Paints, Inc. (Detroit); W. W. Lawrence & Co. (Pittsburgh); The Lowe Brothers Co. (Dayton); John Lucas & Co., Inc. (Philadelphia); The Martin-Senour Co. (Chicago); Rogers Paint Products, Inc. (Detroit).

12'0" x 17'0" stain-
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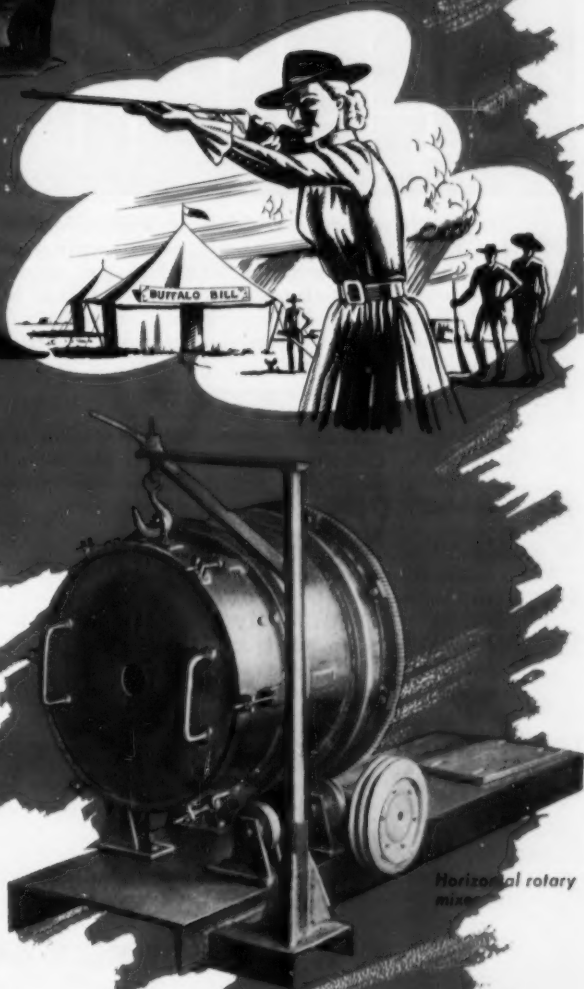
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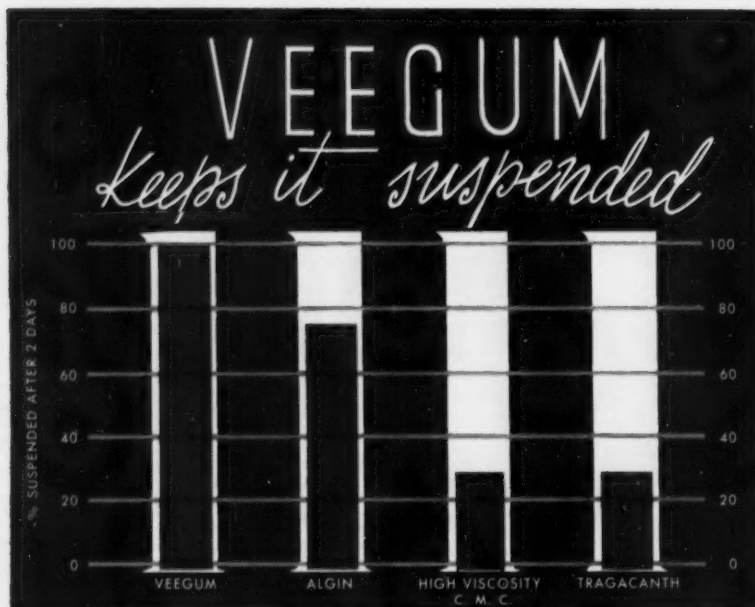
'Way back in the days when audiences were held spellbound by the marksmanship of Annie-Get-Your-Gun Oakley who shot coins tossed into the air—chemical manufacturers were hitting a new high mark in production with KOVEN equipment made to their exact needs. And now more than ever, KOVEN helps chemical plants maintain top quality and top output at lowered costs—with Individualized Equipment fabricated to their precise requirements. Call or write for a consultation—no obligation. Send for facilities Catalogue # 490.

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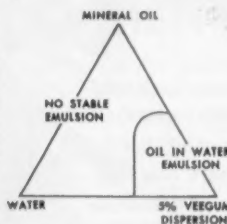
To test the suspending ability of VEEGUM, 4 g of Nyltal 300 (an R. T. Vanderbilt Co. talc) were suspended in 100 cc each of aqueous dispersions of VEEGUM and organic gums at 65 centipoises. After all suspensions had 2 days to settle, VEEGUM held from 28% to 300% more talc suspended than any organic gum tested. Results were similar when we tried pyrophyllite, clay, colloidal sulphur, and such organic compounds as DDT.

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SPECIALTIES

space and 2,500 sq. ft. of office space. Manufacturing plants of the firm are in Minneapolis, Fort Wayne, Ind., and Atlanta, Ga.

Southern Shift: Mizzey, Inc., formerly of New York, has moved to Clifton Forge, Va. The firm makes and sells chemicals, principally for dental laboratory outlets.

Sold: Midcontinent Chemical Co. (Grove City, O.) has sold its rubber division to Auburn Rubber Co., Inc. (Auburn, Ind.), which has taken over manufacturing rights and sales of the firm's rubber shoe factory products. Not included in the deal is neoprene crepe. This will be handled by the Shreiner Sole Co., Inc. (Killbuck, O.).

Detergent Suit: A \$100,000 suit has been filed in U. S. District Court in Wilmington, Del., against Procter & Gamble Distributing Co., sellers of the detergent Cheer. The plaintiff, Samuel Cohen, is suing for damages he claims resulted from the use of Cheer in his laundry.

According to the action, the plaintiff on the night of Jan. 10, 1953, donned pajamas that had been washed in Cheer. The next morning, his suit reports, a heavy rash had broken out over most of his body. Besides the rash, there was "a severely painful aching in the plaintiff's back and various joints" as well as "an extremely tired, dragged out feeling, particularly in his lower legs for about two weeks."

The charge against the company is that it was negligent in allowing some chemical to be introduced into the product that could have caused such a condition.

Getting Bigger: Several firms have recently completed additions, or acquired additional holdings. Among them:

- Graco Fertilizer Co., Cairo, Ga., has purchased the facilities of the Fertilizer Co. and will expand and modernize the plant.

- Thompson-Hayward Chemical Co., (Dallas, Tex., branch) has expanded facilities to include packaging of liquid chlorine, and manufacture of a liquid bleach for industrial use. The plant will pack chlorine in 150-lb. cylinders, taking over that phase of chlorine handling from Columbia-Southern Chemical Corp.

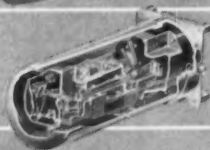
- Sponge Rubber Co., Shelton, Conn., has bought the land and 34 buildings (560,000 sq. ft. floor space) of the Sidney Blumenthal Co., for a reported \$1.5 million. Sponge Rubber plans to enlarge its foam rubber op-

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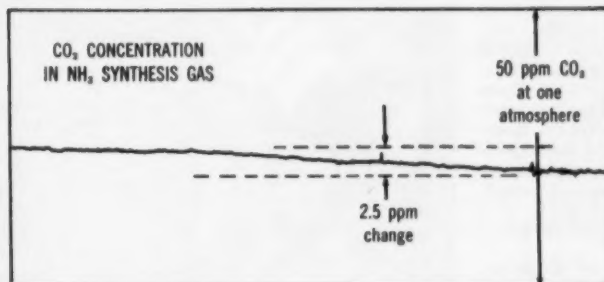
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SPECIALTIES

erations in the newly acquired plant.

• Whitney Blake Co., Hamden, Conn., plans \$770,000 expansion of its facilities to manufacture compounded rubber, used for insulating electric wire.

• Agricultural Chemical, Oklahoma City, Okla., has sold its insecticide manufacturing equipment to Nichols Seed Co. The equipment will be moved to Jones, Okla.; plant production is expected this month.

• Fairfax Biological Laboratory, Clinton Corners, N. Y., has purchased the Edgar A. Murray Co., Detroit, manufacturers of DOOM insecticides.

Combination Ointment: Erythroguent, an ointment containing the antibiotic erythromycin, methylparaben, and butyl-*p*-hydroxybenzoate, is being made by The Upjohn Co. It's used to treat various cutaneous bacterial infections.

Texas Plant: The John Puhl Co., subsidiary of Sterling Drug, Inc., is building a \$500,000 plant in Houston, Tex., to manufacture liquid bleach.

British Purchase: British Paints Ltd., (Newcastle - on - Tyne, England) through its subsidiary, British Paints (Canada) Ltd., has purchased the Langmuir Paints Div. of General Products Manufacturing Corp. Ltd. (Oakville, Ont.).

North Carolina Firm: The Mid-South Dye & Chemical Co., Inc. (Wadesboro, N. C.) has been granted a North Carolina charter, will distribute dyes and other chemicals used in the textile trade. Authorized capital: \$50,000.

Mixer: The Agriform Co. (Pasco, Wash.) expects to build a liquid mixing fertilizer plant within a year. The company just completed negotiations for tanks and storage space at the nearby Walla Walla airport.

Lead Compound Stabilizer: Witco Chemical Co. (New York) has developed a lead compound, Stayrite #229, for stabilizing halogen-containing organic materials. The company says that because of its highly reactive lead oxide content, the product is particularly suitable as a heat stabilizer for opaque and rigid polyvinyl chloride compositions.

Pair of Dyes: National Aniline Div., Allied Chemical & Dye Corp., now markets two new dyes and a fast-color salt, Chromolan Green BL, Naccogene Yellow GS Powder, and Red AL Salt.

CHEMICALS OUTLOOK

February 1954



SAVINGS FOR PAPER MANUFACTURERS USING SODIUM SULFITE

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

Many paper manufacturers, using sodium sulfite for semi-chemical processing of wood, can secure a saving by manufacturing their own sodium sulfite. Soda ash and sulfur are the raw materials needed. The saving, of course, varies with tonnage used, current costs of raw materials, freight, etc. It may be advantageous to you to compare the cost of sodium sulfite purchased from outside sources against projected cost to make in your plant. Suggested procedure is to call Wyandotte Technical Service for complete data and accurate calculations on which to base your decision.

TO FARSIGHTED EXECUTIVES IN THE PAPER-MAKING INDUSTRY

Paper-mill executives, with the competitive future in mind, will do well to contact us on Purecal* M Fine (new grade of precipitated calcium carbonate). Our work has progressed to the point where, we believe, a full-scale mill trial could well result in a marked improvement in your coated papers . . . Wyandotte would like to co-operate with you. If interested, write us now.

TO TEXTILE MAKERS WHO WANT TO LOWER THEIR BREAK-EVEN POINT

The Pluronics*, Wyandotte's new series of 100%-active nonionic surfactants, are evoking considerable interest in textile processing. Outstanding properties include excellent soil removal and suspension, combined with low foaming.

The Pluronics are effective detergents at low concentrations, in hard or soft water, and may be used at lower-than-usual temperatures. They remove lubricants, sizes, finishes, pitch, emulsifying oils, greases and dirt, and prevent redeposition onto the fiber. Colored goods are left clear and bright.

Wyandotte Pluronics are non-hygroscopic, neutral, salt-free . . . are compatible with the oils, soaps, anionics and cationics used in textile processing . . . and are available in either liquid or flake form.

Specific information will be furnished if you write giving as many details of your process as possible.

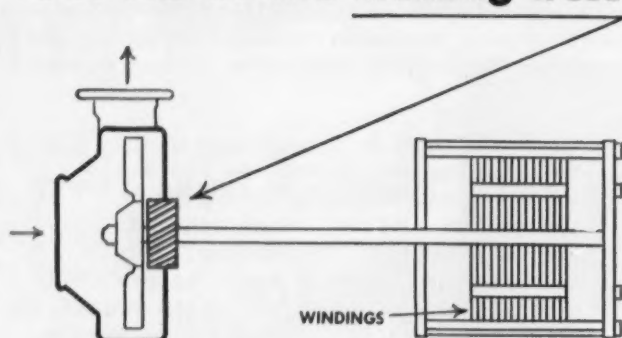
*REG. U.S. PAT. OFF.



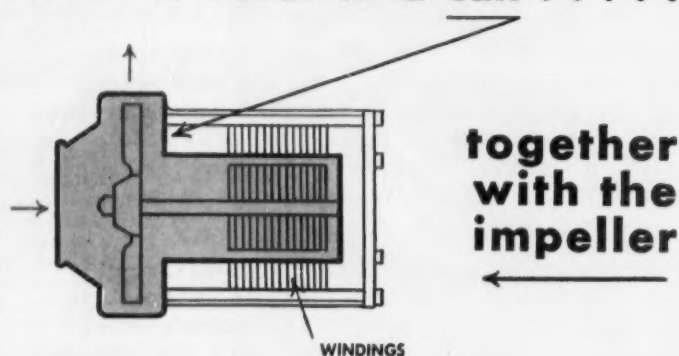
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Get rid of the stuffing box . .



Put the rotor in a can



Primed for Action

Spurred on by the atomic energy program, the development of canned pumps is resulting in dividends to chemical processors.

The pumps are intended to pare maintenance costs, material losses by eliminating the stuffing box and seal.

First cost is still high, but a spate of pump makers are in the field trying to lower it.

Destined to change the whole concept of "pigboat" warfare, the nuclear submarine *Nautilus* is now being fitted with its atomic engines.* To a large extent, the success of its STR (submarine thermal reactor) will hinge upon the perfection of its sealed pumps. Expensively designed for specialized applications, these new, "canned" pumps have little immediate significance for chemical process men. But developments leading up to—and

* Launched last week without its engine, the *Nautilus* isn't expected to be ready for shake-down runs before next summer.

away from—the "hot" pumps are yielding dividends that chemical men are starting to reap.

Sealed Past: Given a choice of pumps, the chemical engineer will pick a centrifugal one almost every time. His reasoning: its design is simple and though centrifugal pumps have never been famous for high efficiencies, they do lend themselves to approximately 85% of the process industry's pumping jobs.

But despite their versatility, they've had some drawbacks. Probably the

biggest is the need for a stuffing box to seal the rotating shaft and the stationary casing. On contact with corrosive chemicals, the packing is apt to wear and cause leaks; eventually it has to be replaced.

One large company estimates that elimination of this problem would save it some \$250/year per pump in maintenance costs, as much as \$1,800/year per pump in material losses on some applications. Pump makers, long aware of the pumps' limitations, have been consistently improving the stuffing box and the seal.

Putting It in a Can: It was the atomic energy program, however, and its need for pumps to guarantee leak-tight service that caused the manufacturers to take a new tack. Why not, they asked, place all the moving items—rotor, shaft, impeller and liquid—in an airtight "can," sealed and separated from nonmoving parts. And now after a decade of development, "canned" pumps are hitting the market in growing numbers. More important, they're gaining acceptance by chemical men.

The lineage of the development is intricate, all but impossible to trace. But here are some of the highlights:

- In 1939, two Philadelphia engineers, David Litzberg and Howard White, completed an operating model of what was later to become the canned Magnaflow pump. Before they could start production, they were called to service in World War II.

- In 1946, Alliance Industries, Inc. (Huntington Valley, Pa.) started production of the Magnaflow pump. Impeller and rotor were joined within the stator and consequently limited by the size of the motor.

Available only in ½ hp. models, the pump could handle 30 gpm. under open discharge. But in order to increase the impeller size, the motor would have to have been made inordinately and uneconomically large. Here's why: as the motor increases in horsepower, it grows principally in length, only slightly in diameter. On the other hand, as the horsepower of a centrifugal pump increases, the diameter of the impeller gets bigger, soon gets too big to be placed within an electric motor of the corresponding horsepower.

Recently taken over by McDougall Co. (Galt, Ont.) the pump will now be produced in ½ and ¾ hp. models for sale in the U.S. and Canada. Approximate price: \$64 for the small pump, \$96 for the large.

- In 1950, Atlantic Pump Corp. (Philadelphia) came out with the

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PRODUCTION.

canned Hermetik pump. It was designed to take advantage of the axial air gap motor, followed the latter's pancake outline. A combined rotor-impeller, which turned on the face of the stator instead of inside it, was separated from the stator by a non-magnetic stainless steel diaphragm.

In the Hermetik, both stator and rotor-impeller diameters increased with an increase in horsepower, but not in direct proportion. They were produced in sizes up to a 10 hp. model in which the impeller was only half the size of the stator.

The subject of a patent suit, the pump was taken out of production in 1951. Zenith Engineering Corp. (Philadelphia) cleared the rights and may bring it back into production this year. Zenith presently is working on an Air Force contract for its new model G canned pump, which is used to circulate Butyl Carbitol in cooling a radar system. The model G is small ($\frac{1}{2}$ hp.) sells for \$135, is available to industry.

- In 1952, Chempump Corp. (Philadelphia) made its debut with its canned Chempump series. The rotor, as in the Magnaflow, was placed within the stator, but the impeller was moved forward and to the outside of the stator (see diagram, bottom) in order to overcome limitations imposed by size of the motor housing. Rotor, shaft, impeller and fluid are still encased in a sealed can apart from the stator.

Available in $\frac{1}{8}$, $\frac{3}{4}$, 1, 2 and 3 hp. versions, Chempump will handle up to 170 gpm. under 30-ft. head in its 3-hp. model. Prices for the 3-hp. pump: cast iron, \$730; 316 stainless steel, \$985; monel, \$1,190. The firm is also distributor for the model E Chempump (somewhat similar to the Magnaflow pump with the rotor-impeller bounded by the stator) in the process industry.

This year, Chempump Corp. plans to introduce 5, 7, and 10 hp. versions of its standard series, plus three new models: a double-ended pump with impellers at both ends, a pump for handling Dowtherm, and one for use in high-pressure lines.

- In 1953, Allis-Chalmers Mfg. Co. (Milwaukee) entered the field with its canned fluid piston bearing pump. Rotor and impeller are set on a common rotating shaft with the impeller forward and outside the stator confines (see diagram, bottom) somewhat similar in design to Chempump. Through the rotor-impeller shaft runs a hollow, stationary shaft. Flow material passes out through fluid pockets in the nonrotating shaft, acts as a fluid

PRODUCTION

bearing for the rotor-impeller shaft.

Actually, declares A-C, it has been on the market with hermetically sealed pumps since 1949. But its new canned pump, developed by the firm's Nuclear Power Section, apparently resulted from the company's interest in atomic power. In reply to a CW query, A-C declares "... if it's a liquid, we can pump it. That includes liquid sodium and all others, metals or otherwise."

At present, there are two pump series available: a general purpose type for fluid temperatures to 1000 F; a multipurpose type for fluid temperatures to 1500 F. Planned expansion of the current series will make available a full range of pumps capable of handling from 5 to 40,000 gpm.

• Also in 1953, Peerless Pump Div. Food Machinery & Chemical Corp. (Los Angeles) introduced its canned vertical drive pump to the trade. The pump actually had been undergoing evaluation at Columbia-Southern's Barberton (O.) plant and Westvaco's South Charleston (W. Va.) plant for some time.

Designed specifically for unloading liquid chlorine from storage tanks, the pump is base-mounted in a vertical position. Rotor and impeller are tandem-mounted on a common rotating shaft long enough to extend through the base (which is set atop a storage tank manhole) into the fluid. The rotor sets within the stator (as in the other canned centrifugal pumps) above the base; the common rotating shaft continues inside a clarinet-like casing through the base into the fluid; the impeller is mounted on the bottom end of the shaft. The pump outlet is located just above the base.

Current models range up to 30 hp., will push 300 gpm. under 200-ft. head. While continuing evaluation may uncover other-than-chlorine applications, new uses will have to justify the pump's estimated \$4,000 price tag.

Indirect Approach: Three years ago, Peerless installed magnetically driven horizontal pumps at Heyden Chemical and Lederle. These pumps are sealed and centrifugal, but are not canned pumps in the strict sense of the word.

Tradenamed Peerless Magnetic Drive Pumps, they consist of conventional induction motors (*see diagram, top*) with a permanent magnet attached to the end of the rotor shaft in place of the impeller. Separated from the magnet by a nonmagnetic diaphragm, the pump casing contain-

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PRODUCTION.

ing the impeller is joined by a common rotating shaft to another permanent magnet. As the motor turns one magnet, the other magnet within the pump casing rotates the impeller. The stainless steel, 2-hp. model pushes 65 gpm. under 60-ft. head, sells for approximately \$1,500 (minus motor).

Another unusual approach toward completely sealed pumps is offered by the straight and bent shaft Vibropumps. These are neither truly canned nor truly centrifugal pumps. A conventional motor drives either model.

In the straight shaft Vibro-pump, a flywheel is attached to the end of the rotor shaft. Another shaft enters the outer edge of the flywheel at an angle and there is encased in a radial bearing. The other end of the secondary shaft enters the pump casing through a flexible diaphragm to which it is permanently sealed. Impeller vanes are attached to the pump end of the shaft. As the flywheel turns, the secondary shaft moves but does not rotate, produces a motion at its pump end similar to that given by a hand being turned at the wrist only.

A similar motion is produced in the other model by a slightly bent shaft rotated directly by the motor. The curved shaft pushes through a closed sleeve in the flexible pump diaphragm. The shaft rotates within the sleeve causing attached impellers to move but not rotate. Both models are now being offered to pump manufacturers by Donn Bennett Productions (Philadelphia).

The Rheinütte RE stuffing-boxless pump (a German import handled by Neumann & Welchman of New York) takes a still different tack in approaching the problem of complete sealing. It also is a centrifugal but not a canned pump. To keep fluid contained within the pump casing, vanes are placed on the rear side of the impeller. As the impeller rotates, these vanes build up backside pressure strong enough to keep fluid from leaking over the impeller and out the rear, and at the same time provide an additional safeguard by keeping the shaft seal under partial vacuum. At rest, a centrifugal governor actuates the seating of a ring valve to prevent passage of fluid into the shaftway.

There are, of course, many other pumps both centrifugal and noncentrifugal intended to improve the seal presently under development.

Drawbacks: Pumps, like most other items of equipment, have their drawbacks. With canned pumps it's the increased initial cost. Price tags generally run higher than combined cost

PRODUCTION

of conventional pumps and motors.

Then there is the thinness of the can, which offers but little corrosion reserve. In many cases where canned pumps would justify their greater cost, flow material is extremely corrosive; one small hole in the can could ruin motor as well as pump.

Too, the flow material is the lubricant in many canned pumps. Consequently, it must be clean as well as noncorrosive.

Over-all judgment, of course, must await further evaluation and development. At present, however, it appears evident, that the new canned pumps are already filling certain vital niches in the chemical process industries where costly material is lost through leakage or contamination and where toxic (or radioactive) material is loosed to the surroundings.

Partially Recycled

Continuing to evince interest in the chemical field, The M. W. Kellogg Co. (New York City) has just revealed some of the details on its urea process, licensed from Italy's Montecatini.

Like the other current processes for making urea, Montecatini's is based on the reaction of carbon dioxide and ammonia to make ammonium carbamate, which is decomposed to urea and water. The difficulty with the reaction is that conversion of ammonia per pass is generally low, and, for economic reasons, the ammonia must either be recovered or recycled. In recycle processes, when the unreacted gases are recompressed to the reaction pressures, the mixture solidifies, clogs up the reactor. Means of preventing this forms the principal basis of difference in the processes (CW, Dec. 13, '52).

The Montecatini approach is what Kellogg describes as a "partial recycle" process. Here's how it works: carbon dioxide is charged to the reactor where it reacts—at relatively low temperatures—with recycled liquid made up of carbamate, fresh ammonia and some excess water. Urea and carbamate, which are formed, exit the reactor through an expansion valve at the top. Next, the effluent enters a combination expansion and condenser vessel where the carbamate flashes off as ammonia and carbon dioxide. It's condensed, dissolved in fresh ammonia and steam condensate and is ready to be recycled. The urea, which contains some carbamate, leaves through an expansion valve, is stripped of unreacted ammonia and carbon dioxide by steam.

The process is being offered by Kellogg's Chemical Process Division.

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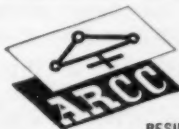
American Resinous Chemicals Corporation has developed resin solutions, emulsions, hot melt adhesives and coatings, specifically designed for many applications. In each case these adhesives must meet production line methods that turn out thousands and thousands of products at low cost. Furthermore they must work regardless of the type of equipment involved. The success of ARCCO adhesives and coatings in all cases is a tribute to their almost limitless versatility.

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CHLORINATED SOLVENTS

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Propylene Dichloride

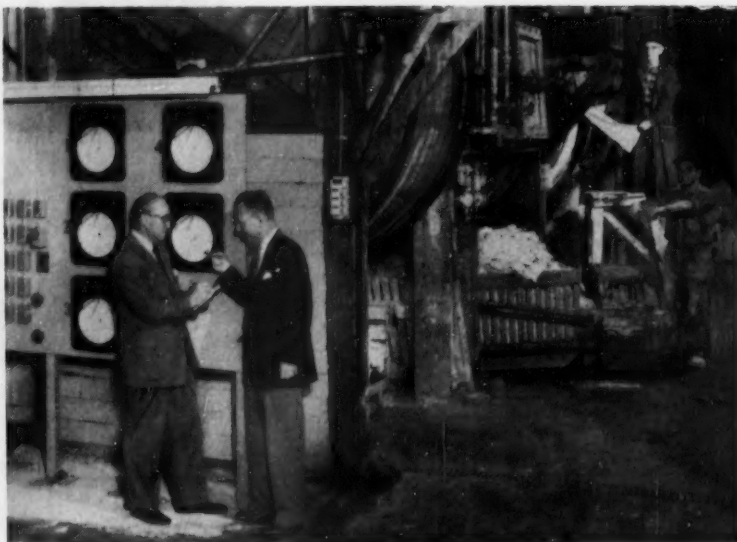
Methylene Chloride
Carbon Tetrachloride

Perchloroethylene
Trichloroethylene



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PRODUCTION



AUTOMATIZED TANNERY: The scientific substitute . . .

Push-Button Tannery

Milwaukee is a city famous for its
beer, more recently for its thousands
of avid baseball fans. Less well re-
cognized is the fact that it's the center
of a sizable tanning industry. And if
the officials of the Glove Headquarters
Division (Milwaukee) of the Colonial

Tanning Co. (Boston) have their way,
it will become equally famous as the
site where automation got its start
in the tanning industry.

For they've recently concluded a
modernization program that's doubled
the output there. More important,

Here's What It's Done

The best way to realize the difference between a conventional tannery
and the modernized one at Colonial is by a quick comparison of the
tanning operation there before the program was started and after it
was completed:

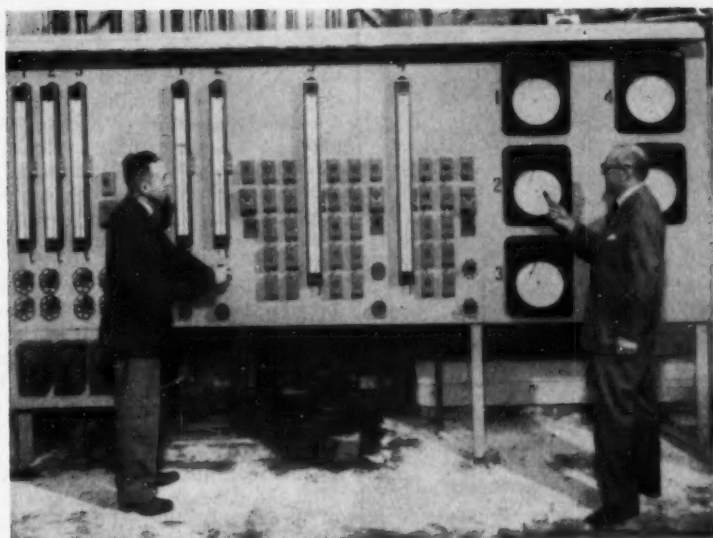
Before:

- A carload of oil drums arrives,
is unloaded by four men and a
fork lift truck. They're stored
three high on pallets.
- Each batch of solution is pre-
pared individually by weighing up
the required quantities of each oil
as they are taken from the drums.
Each batch is mixed, cooked and
poured by dipbucket into the spill-
box of each drum. This is done
seven or eight time/day for each
of the three processing steps.
Empty drums are stored.
- The skins are dried in heated
mills. An operator stops the cycle
when he thinks the leather is dry.
He has to open the door to feel

the leather frequently toward the
end of each drying cycle.

After:

- Oil arrives in a tank car. An op-
erator connects a hose and the oil
is pumped to overhead storage
tanks.
- An operator pushes a button
and the required amount of oil is
discharged automatically to the
mixing vats. There, it's cooked
under thermostatically-controlled
heat. Another button unloads the
vat to a drum of leather.
- Humidity and temperature con-
trols are set. The mill stops au-
tomatically when the leather is prop-
erly dried.



... for an operative art.

they've introduced some of the latest scientific techniques to tanning, one of the world's oldest arts. Walking through the plant, you'd never confuse it with a refinery or a modern chemical plant, but it's a far cry from conventional tanneries.

Keeping in Step: Saul Levine, works manager, and Gus Sokol, who founded the Milwaukee division as the Midwestern subsidiary of the Boston firm in 1941, make no bones about the reasons for the streamlining program. Says Levine: "Only since postwar substitutes have threatened the industry's existence have some steps been taken toward mechanization and product control." And says Sokol: "For the first time since the end of the war, we face a real competitive struggle."

So the two men decided that to keep ahead of competition they'd have to bring the ancient art up to date. They engaged the services of Robert Rodwell, a local consultant who specialized in industrial process control, among other things. He in turn called in men who had done similar work in other industries. The result of the joint effort is apparent in the finished plant, where, for instance, a supervisor and one helper can do more work than a supervisor and five helpers had done previously.

Surprisingly enough, Levine and Sokol claim that enlisting the cooperation of the older employees didn't prove too difficult a job. Paul Lutz, the tanner, for example, who according to Levine "has been practicing his tanning sorcery for 35 years," is as happy with his control panel as he was with his dipbuckets. And they

point out that although some men were eliminated from the tanning operation, the increased throughput requires more men in other departments. They expect that the transition from the old to the new can be completed within 60 days without altering the work force by a single man.

EQUIPMENT. . . .

This week, the accent was on electronics:

- Jordan Electronic Sales (Pasadena) introduced its remote area monitoring system. Designed to measure radiation from background to as high as 100,000 R/hr., the system uses a simple circuit that can handle from 1 to 10 remotely located ionization chambers. Suggested applications: monitoring of radiation installations, checking "hot" lab personnel and equipment for contamination.

- From General Electric (Schenectady) comes word of a new line of process timers. Typed G-E TSA-18, the timers provide adjustable time-delay opening and closing of electric contacts for control of process equipment such as mixers, conveyors, hydraulic presses and ovens. They are available in single-circuit or two-circuit models.

- Sanborn Co. (Cambridge, Mass.) unwrapped its new four-channel oscillographic recording system. The unit, says Sanborn, offers a combination of interchangeable plug-in elements enabling it to graphically register (singly or up to four simultaneously) stress, pressure, current, flow, temperature, and almost any other phenomenon

Here's why we vacuum-distill fatty alcohols

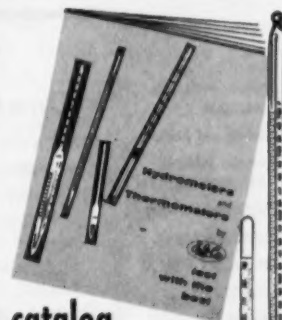
-as often as four times

CACHALOT brand fatty alcohols are made to the tightest possible specifications. This enables users to control their end-products without bothersome formula adjustments. To make sure of lot to lot uniformity, these fine cetyl, oleyl, and stearyl alcohols are produced by vacuum-distillation. Deliveries are always uniform. *This is one reason why CACHALOT is the brand cosmetic chemists re-order.* Yet CACHALOT prices are low enough to allow their use as chemical intermediates, emulsifiers, penetrants, additives, plasticizers, etc. For a copy of the booklet on "Possibilities", write M. Michel and Company, Inc., 90 Broad Street, New York 4, N. Y. Basic suppliers to chemical manufacturers for over a quarter century, their trade name for fine fatty alcohols is

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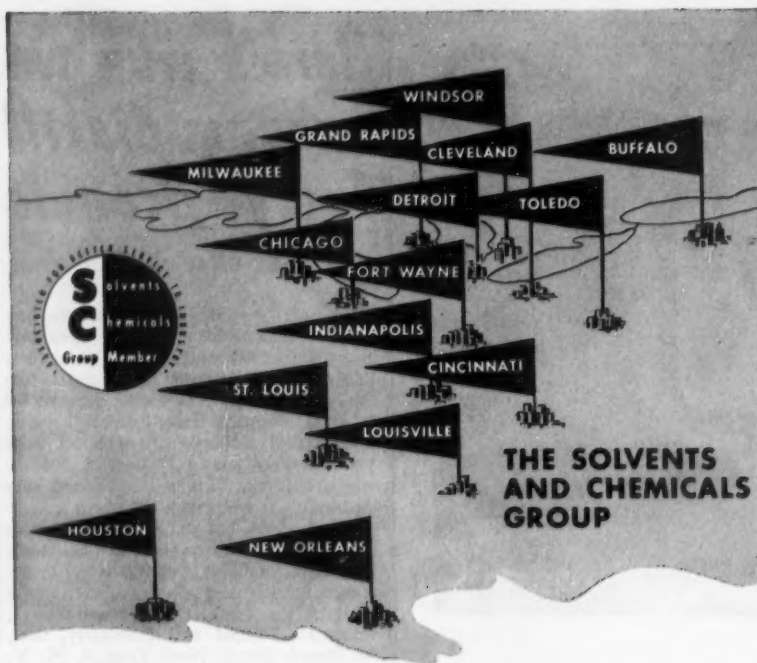


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MILWAUKEE, Greenfield 6-2630
NEW ORLEANS, Temple 4666
ST. LOUIS, Garfield 3495
TOLEDO, Jorden 0761
WINDSOR, Ontario 4-4378

PRODUCTION

whose frequency range falls between zero and 100 cycles/second.

• Now on the market is a new miniature panel-mounting version of the Trio Laboratories (Wantagh, N.Y.) type A vacuum tube voltmeter. Claimed to have all advantages of electronic measurement of ac. voltages, the unit requires only as much panel area as a standard 3½x4¼-in. meter.

• Atomic Instrument Co. (Cambridge, Mass.) came out with a new model 164 preset counter. It will, says the firm, monitor up to 5,000 counts/second any movement that can be measured by an electrical device or mechanical pickup.

• **Long Line:** Just out from the L&L Mfg. Co. (Chester, Pa.) is a new line of Dyna-Trol industrial electric furnaces. Over 40 standard models, equipped with Cyber-Tac temperature controllers, are offered. In addition to indicating, the controllers, says L&L, will hold or cut off temperatures to a plus or minus 2% of full-scale reading.

• **Test Chamber:** Webber Mfg. Co. (Indianapolis) has now added a temperature testing unit, Model A-30-40FH, to its line of atmospheric chambers. Designed for handling large capacities, the unit measures 30 cu. ft., features visible controller, patented heat exchangers, multipaned visual port and openings for connections to inner chamber. Temperature range: -40 F to 200 F.

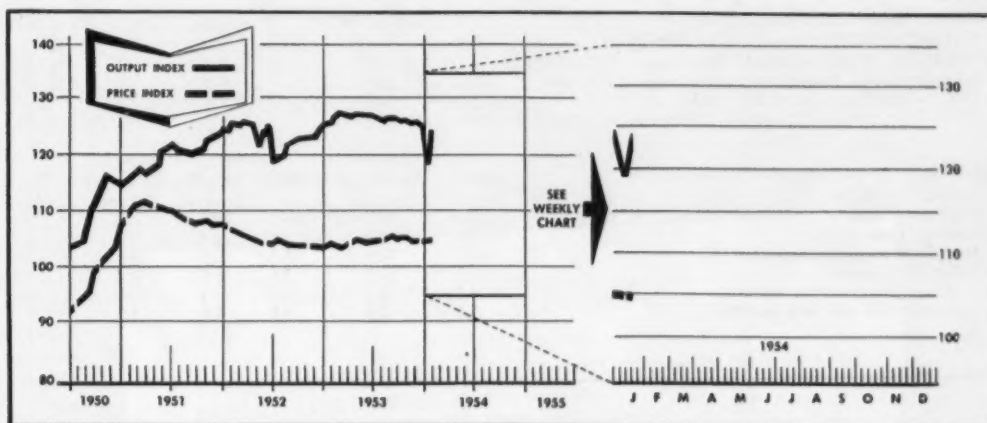
• **Bulletins:** For those interested in pigment dispersion problems, Kinetic Dispersion Corp. (Buffalo) is now offering a 40-page booklet covering some of the factors pertinent to proper pigment dispersion. Featured are hints on obtaining the most efficient usage of the firm's Kady mill.

• Another mill, the laboratory Rafton mill, is described in a new bulletin now available from Rafton Engineering Corp. (Andover, Mass.).

• Just published by U.S. Stoneware Co. (Akron), brochure K-10 discusses a new approach to difficult tank lining jobs. The approach: using Kel-F welded membrane for the linings.

• **Bigger Plant:** In order to speed delivery and increase production of its pressure filters, centrifugal pumps, and ion and heat exchangers, says Industrial Filter & Pump Mfg. Co. (Chicago), it is embarking on another expansion program. Goal: an additional 15,000 sq. ft. of plant space.

MARKETS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

More than one chemical marketer is quoting from the President's special economic message to Congress last week, emphasizing his conviction that the current "minor readjustment" will end soon. For though Eisenhower was referring to business in general, his remarks come surprisingly close to chemical industry prognostications made late last summer (CW, Sept. 5, '53).

Belief that the dip is of a temporary nature may be further bolstered by chemical market conditions prevailing this week. Demand, on the whole, is rated good. Basic items like sulfur, soda ash, caustic soda, are enjoying a brisk activity.

Pre-empting the pricing spotlight is crude glycerine. Some sales of soap lye material are being made at 20¢/lb.—up, in two stages, from the 18½¢ figure of a couple of weeks ago. Saponification grade, at this writing, is 22¢.

With crude firming as it is, trade followers are speculating on the price-fate of refined glycerine. Most tend to discount any immediate hiking in the latter despite the higher price of crude. Here's why:

- Stocks are at a good level. Official year-end figures, out last week, show a back-to-normal three-month consumption supply—some 59.9 million lbs.

- Price of crude would have to go up another 5 or 6¢/lb., wipe out the profit-permitting spread that enables refiners to buy, convert and sell refined glycerine.

- Soapers insist the current increases are not significant, represent a transitory trend from last month's sagging, involve only a relatively few tankcars.

But note this: abrupt changes have not been uncommon in the glycerine arena. And though refined demand hasn't been racing of late—in fact has even sparked some recent reduction talk—odds are that perking interest could bring a price-changing—but probably not before the second quarter.

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.7	124.2	126.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	105.0	105.1	103.0
Bituminous Coal Production (daily average, 1,000 tons)	1,363.0	1,363.0	1,535.0
Steel Ingot Production (1,000 tons)	1,762.0 (est.)	1,802.0 (act.)	2,202.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	270.0	268.7	261.2

MONTHLY INDICATORS—Foreign Trade

(Million Dollars)	Latest Month	Exports Preceding Month	Year Ago	Latest Month	Imports Preceding Month	Year Ago
Chemicals, total	69.9	70.5	58.3	19.5	22.0	17.7
Coal tar products	4.6	4.5	3.1	2.7	3.0	2.9
Medicinals and pharmaceuticals	19.5	19.5	15.5	0.5	0.4	0.4
Industrial chemicals	10.1	10.6	9.5	5.5	5.5	4.3
Fertilizer and fertilizer materials	3.7	4.7	2.8	7.3	9.5	8.5
Vegetable Oils and fats, inedible	5.1	2.5	3.6	6.6	4.4	8.0

Activity in the resellers' market is frequently a good indication of a chemical's supply/demand status. For example, solid caustic soda, apparently maintaining its recently advanced prices—now in a \$2.95-3.25/cwt. range—points up the continuing good rate of export inquiries.

Evidence of price cutting for European and South American business—fairly prevalent not too many weeks ago—has disappeared. That, of course, doesn't mean there's an upcoming shortage, but does underline a current slight tightening-in-supplies trend.

Ethyl alcohol makers, on the other hand, see no such market knotting ahead. At least one major synthetic producer hangs a "general weakening" label on conditions and some more-than-spotty price shading seems to confirm the description. Concessions, though, are available only to big-volume users, and centered principally in the Midwest.

Reports that French alcohol is being peddled at 17½¢/gal., c.i.f. (and perhaps under) isn't taking too much of an impact on the market. Reason: redistillation, other costs can wipe out most of the price advantages.

But despite the cloudy alcohol picture, any cut in established manufacturers' (synthetic or fermentation) schedules seems unlikely within the next month or two. Or so say most sellers.

Crowded, if not clouded, will be an apt term for the polyethylene market. This week Koppers Co. tossed its hat into the plastics ring, will add to the polyethylene deluge expected in 1955 (CW Market Letter, Nov. 14, '53). The company plans to start building a plant this spring. Although there's no official word as to its cost or capacity, a broad hint pegs Koppers' contribution nearer the 25- rather than the 50-million lbs./year level.

Site decision, still up in the air, will be settled shortly after the first of March. It's an outside chance the location will be in California, but odds are Koppers will join the caravan to the Southwest.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending February 1, 1954

DOWN

	Change	New Price		Change	New Price
Butane, indust., tanks, group 3, gal.	\$.005	\$.045	Crude glycerine, saponification, 88-pcs, to refineries, tanks, divd., lb.	.005	.22
Propane, com'l., tanks, group 3, gal.	.005	.045	Crude glycerine, soap, lye, 80pcs, tanks, divd., lb.	.0075	.20

All prices per pound unless quantity is stated.

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Time is the test of dependability. Behind Nialk Chemicals are
more than fifty years of experience in meeting strict specifications.

a typical example...

NIALK CAUSTIC POTASH: Railroad signals and navigation lights must give instant, peak performance in all kinds of weather. NIALK Caustic Potash sees that they do. It "weatherproofs" electric cells, assures dependable current even at sub-zero temperatures.

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KRAFT-lok users report definite dollar savings
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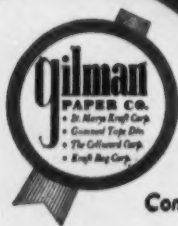
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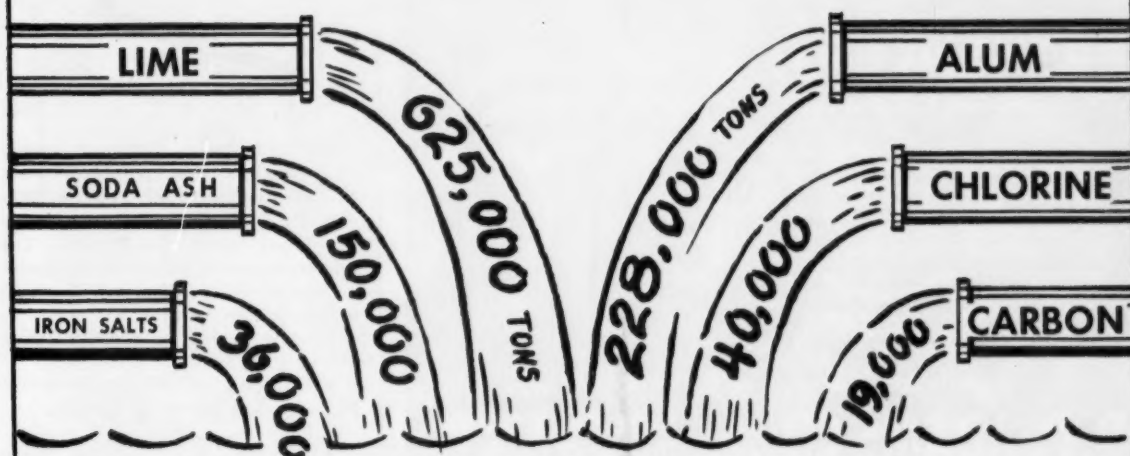


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You can mark up the production of safe-for-drinking water as a big and vital business—a not insignificant market for chemicals for treating water.

- Water utilities now represent a capital investment of \$7.5 billion.
- Over 100 million people depend on water utilities for an average of 140 gallons per person per day.
- Water value runs about \$800 million/year.
- The industry ranks eighth among "industrial producers" in the U.S.

Right now the U.S. Public Health Service holds this vital assignment from the Office of Defense Mobiliza-

tion: to size up our national water production potential. Within a fortnight Public Health expects to send out questionnaires to all U.S. cities of 10,000 or more population, and to a sampling of cities between 5,000 and 10,000.

And this is how water-treatment chemicals rate—as distinguished from sewage treatment.

Six To Water Wash: The heavy-weight of treatment chemicals is lime. It's usually in the company of soda ash in the water-softening detail. The tonnage of the two outweighs that of all other water-treatment chemicals

combined (see charts on lime and soda ash consumption trends). Lime for the purification of water took roughly a 13% slice of the 4.7-million-ton consumption of chemical lime in 1953. Running behind, soda ash cut only a 2.8% nick in the 1953 national output of that product.

The lime—as $\text{Ca}(\text{OH})_2$ —reduces the hardness of water by reacting with carbon dioxide, the bicarbonates of calcium and magnesium, and the carbonate and sulfate of magnesium. Soda ash takes out the calcium sulfate.

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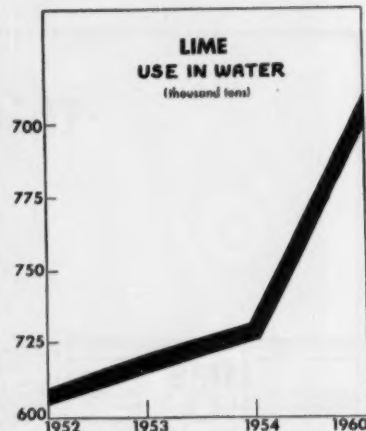
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MARKETS



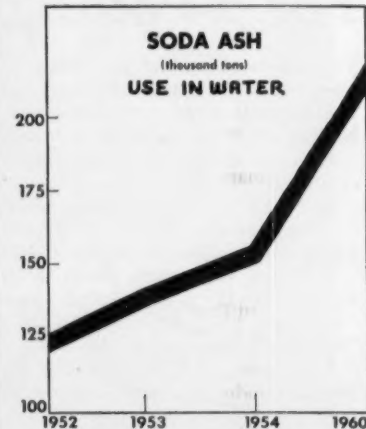
ening of water is the most widely used type of system (some 30,000 are in use in industry, and perhaps 300,000 are in households), it is not a volume-consumer of chemicals. The lime-soda process handles a far greater volume of water and serves about 10 million people annually.

Water-softening treatments offer one or more of these dividends:

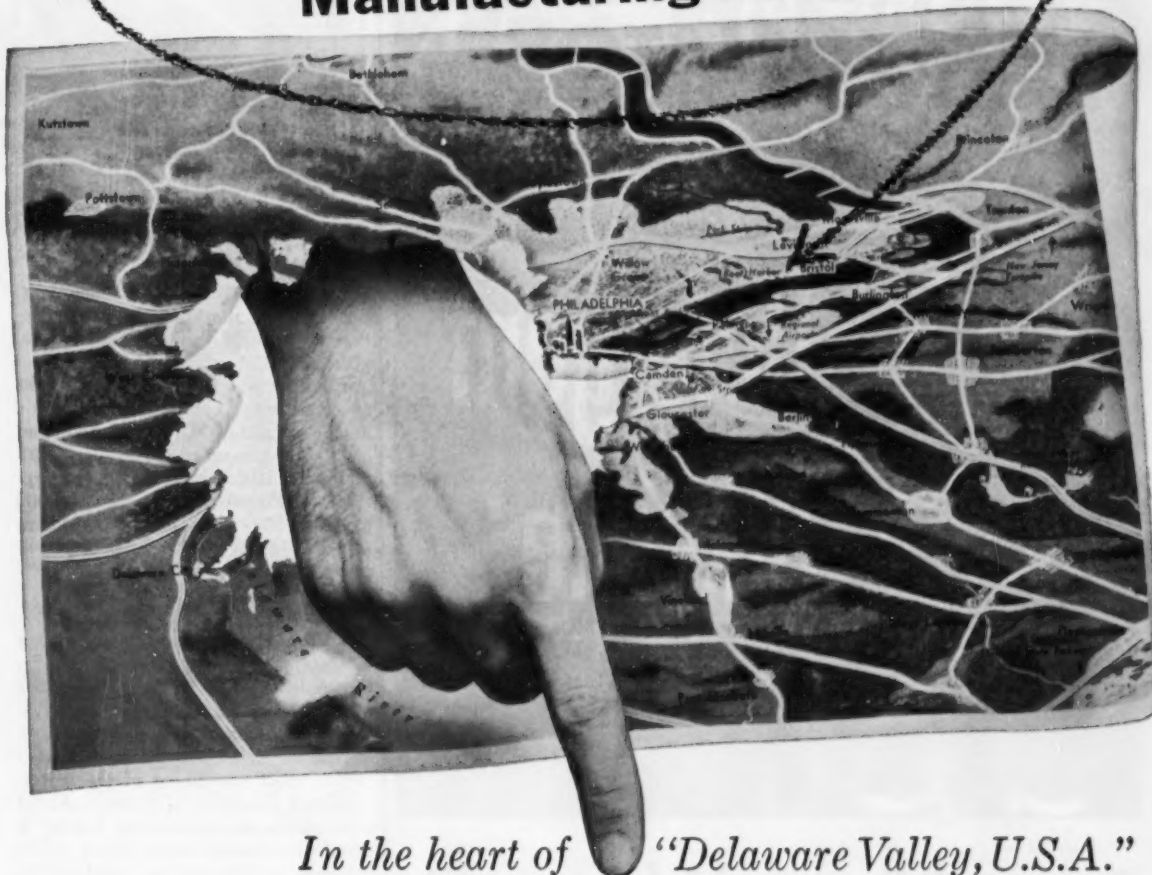
- Cut expenses for repairs or replacements of hot-water systems.
- Save soaps and fuels.
- Eliminate the need for home softening installations.
- Improve coagulation and bacteria removal.

Water from surface sources may bring with it finely divided, often colloidal matter: clay, silt, color-imparting organic matter, algae and bacteria. Slow sand filtration may remove these undesired particles, but usually a coagulating agent is called to duty. The chief workhorse is alum (aluminum sulfate) (see chart). About one-third of the alum output is tabled as a coagulant.

The coagulation objective: to produce a well-flocculated settling sludge, leaving water of low turbidity to go through the filters. Coagulation is a



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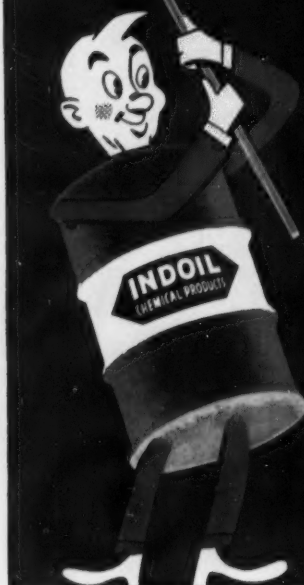


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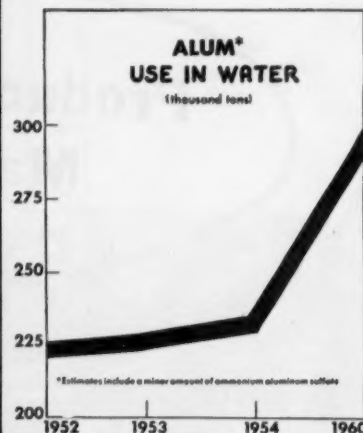
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MARKETS



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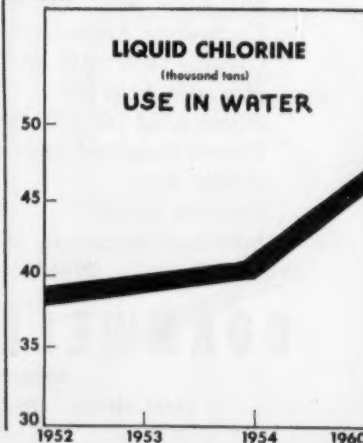
Roughly the tonnage of iron salts as coagulants (chiefly ferric chloride and ferric sulfate*) is but a sixth that of alum consumed annually. Estimates for 1952 and 1953 consumption are 35,000 net tons each; 36,000 tons in 1954; and about 41,000 tons in 1960. Their relatively poor showing is due to

- Corrosiveness,
- Formation of brown stains,
- Loss of some coagulating power in waters high in organic content by the reduction of ferric salts to the more soluble ferrous form (the trivalent aluminum of alum is not reduced).

The most ubiquitous of the water-purifying chemicals is chlorine. About 95% of those waterworks having a disinfection practice use either liquid chlorine or chlorine in combination with ammonia—about 53% of the former, 42% the latter (see chart on chlorine).

Water-purifying chlorine drained

* About 2½ times more chloride than sulfate is used.





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away only 1.4% of the total chlorine produced in 1953; about 2.7% of the total liquid chlorine produced in that year. Chlorine is, of course, one of the most effective agents to kill micro-organisms.

A free chlorine residual in the water supply turns in a fine record on another count: it gets to work on many objectionable odorous compounds, oxidizes them to less noxious forms. But you've got to have a free chlorine residual. That means that enough chlorine must be added to the water to combine with any ammonia present. When the breakpoint concentration is reached, a little excess chlorine can then act as an oxidizing agent. One estimate has it that 40-50% of the municipal water plants practice free residual chlorination.

Besides chlorine, activated carbon has upheld its banners stoutly in the taste-and-odor-control battalions in water works. In fact, more than 1,200 water purification systems in the U.S. and Canada have used this powdered product since its initial trial in 1930.

Ease of use, effectiveness and low cost have run the consumption of

activated carbon up to a tidy 18,000 or 19,000 net tons annually, may boost that to 25,000 net tons by 1960.

Treatment Trends: Lime-soda treatment plants are expensive; can be considered only by the relatively large community. Because about 90% of the softened-water drinkers are served by the lime-soda system, the steady growth* of population in urban areas will hike lime and soda ash consumption still higher.

It costs less to precipitate carbonate hardness from water with lime than to remove it by an ion-exchange process. It's a draw, perhaps, as to whether it's cheaper to remove sulfate and chloride hardness by ion exchangers or with soda ash. The decision depends on the cost of salt and soda ash in the community.

Alum coagulation represents a lot of business in the states of the Mississippi watershed. Its use, spreading throughout the country, will also see a steady population-based growth.

It's a safe bet that chlorine con-

* Estimated growth of the national population for the next 20 years is between 1.4% and 1.5% per year.



Porcelain on Steel

PAINT manufacturers who already note a dullness in the currently slow market will see no cheerful reflection in an improved, now-available, porcelain-on-steel roofing and siding material. This porcelain enamel fused on corrugated steel virtually puts up a go-no-further sign to fire, corrosive gases, moisture and smoke, say its mak-

ers. Military engineers, too, will probably keep a weather eye on possible applications in tropical moisture and salt air areas.

The new material is rolling from the Toledo Porcelain Enamel Products Co., a subsidiary of The Bettefanger Corp., Waltham, Mass., and is being sold under the tradename of V-CORR.

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MARKETS

sumption will increase more rapidly than our population: barely half of the plants now utilizing chlorine use the breakpoint technique, or the addition of sufficient chlorine to leave a free oxidizing residual. Odor-and-taste control advantages of this technique will sell it to more and more water treaters. Higher standards of bacterial quality for water may also boost chlorine demand.

Population growth isn't the only factor driving water-consumption levels higher: there's a spate of synthetic products that take more water in their manufacture than the natural materials for which they are substitutes. Some examples: rayon and nylon manufacture vs cotton and wool; additional stages of the oil refining process vs earlier, simpler ones; synthetic rubber vs natural rubber processing.

The payoff: chemical manufacturers won't be left at a wishing well when it comes to the water treatments. They can expect confidently—more and bigger orders from water works during the next decade.

New Stretch

A new twist to the nylon story turns out to be a stretch. Tire makers and users have been plagued by road-heated bulging of tire carcasses built with nylon. General Tire & Rubber Co. claims it has whipped this problem.

It stretches nylon strands to the breaking point under heat; dips them in crude rubber. This improved nylon cord, called Nygen, is said to reduce dangerous stretch in highway use.

Looking forward to spring and summer driving, General Tire & Rubber is already offering passenger tires with improved nylon cord.

Nylon has been riding the roads in automobile tires for less than a decade. It entered special-purpose, highway and passenger tires about 1946-47; the consumption has more than quadrupled in three years:

Year	Million Lbs.
1951	4
1952	8
1953	17 (est.)

R. A. Moosman of Du Pont's Textile Fibers Dept., Wilmington, Del., tagged for CW the number of current nylon-consuming tire manufacturers by type:

Passenger	9
Highway truck	12
Special purpose (off-the-road)	5
Airplane	6

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investigate RCI Maleic Anhydride

REICHOLD CHEMICALS, INC. 525 NORTH BROADWAY, WHITE PLAINS, N. Y.

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Your Partner
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Synthetic Resins
Chemical Colors
Phenol
Glycerine
Phthalic Anhydride
Maleic Anhydride
Sodium Sulfate
Sodium Sulfite

NO MORE TOXIC FUMES
and dust (simpler handling,
too), thanks to RCI's pellet-
izing of Maleic Anhydride.

TRIETHANOLAMINE

from Carbide and Carbon

25 *...for more than
a quarter of
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That's how long CARBIDE has been producing and supplying triethanolamine. Of all the amines produced, this viscous, hygroscopic liquid offers one of the widest ranges of uses for emulsions and other chemical processing fields. So, before you decide on any amine, consider CARBIDE's triethanolamine—available in two grades, "regular" and "98 per cent."

A 44-page booklet "Aliphatic Nitrogen Compounds" gives the latest information on physical properties, specifications, and shipping data for triethanolamine and the other amines available from CARBIDE. For your copy, write to the nearest CARBIDE office. Offices located in 21 principal cities. In Canada: Carbide and Carbon Chemicals, Limited, Toronto.

SOME OF THE TYPICAL USES OF TRIETHANOLAMINE:

Industrial Oil Emulsions

- increasing solubility of sulfonated oils
- wool lubrication
- leather fat-liquoring
- other oil emulsions

Soluble Oils

- soluble mineral oils
- cutting oils
- textile machinery lubricants
- rayon oils
- orchard sprays

Solvent Emulsions

- hydrocarbon solvent emulsions
- chlorinated solvent emulsions

Industrial Wax Emulsions

- dispersion of casein, shellac, dyes, and rubber latex
- shoe polishes and leather dressings
- sizing and water-proof coatings

Oil and Wax Polishes

Rubless Floor Polishes

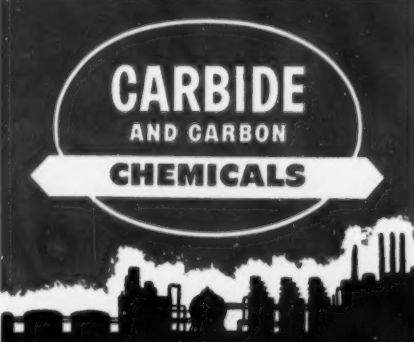
Cosmetic Preparations and Detergents

Neutralize Natural Oils, Clays and Pigments


Photographic Film Developing Baths

Removal of Carbon and Gum Deposits

Corrosion Inhibitor



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